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ORIGINAL ARTICLES.

SPINAL CONCUSSION, SO CALLED.*

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WHILE the subject stated is "Spinal Injuries," it is really intended to confine the discussion to cases of so-called "concussion of the spine."

This paper is a continuation of the subject as presented to the Illinois State Medical Society, at its last meeting, at which time the histories, causes, pathology and treatment of 555 cases of concussion, sprain, fracture, dislocation, gunshot and stab injuries of the spine taken from recent literature were considered with especial effort to discover the true value of operative treatment of such cases. In going over the literature I was struck with the great number of cases which remained unclassified, and which were for the most part grouped under the term "concussion of the spine." This unclassified group seemed to contain every kind of spinal injury in which a positive diagnosis of fracture or dislocation could not be made.

Probably no question in surgery is subject to such diversified opinion as spinal concussion, so called. How a subject of such far-reaching importance to general practitioner, surgeon and neurologist has so long remained unclassified is difficult to understand. No injury, which the surgeon meets, affords more perplexing and embarrassing situations than these. Few injuries, especially in railway surgery, give more serious and annoying medico-legal complications.

Should the railway surgeon make a diagnosis of "concussion of the spine," and attempt to define the condition by quoting authors on the witness stand, it is altogether probable that the opposition could produce quite as many and competent authors as he, no matter what position he took. It was with a desire to find some solution in the present chaotic condition of the naming and description of this class of injuries that the present study was undertaken.

Definition.—Let us consider briefly the definition of concussion. Webster says concussion is "a condition of lowered functional activity without visible structural change, produced in an organ by a shock, as by a fall or blow."

The Century Dictionary defines concussion as: (1) The act of shaking or agitating, particularly by the stroke or impact of another body; (2) the state of being shaken; the shock occasioned by two bodies coming suddenly and violently into collision; shock; agitation; (3) in surgery, in-

jury sustained by the brain or other viscera, as from a fall, a blow, etc."

The Standard Dictionary defines concussion as "The act of shaking violently, as by a sudden blow, or the state or result of being so shaken; shock; agitation, especially in surgery, a violent shock in some organ by a fall or a sudden blow; as the concussion of a shot."

Foster's Medical Dictionary defines "Spinal Concussion" as "A condition of the spinal cord produced by violent shock, such as may be caused by falling from a height, by a severe blow upon the back, or by a railway collision or similar accident. As complications, small extravasations of blood into the substance of the cord or rupture of nerve tissue may exist, also hemorrhage from the spinal meninges and subacute spinal meningitis caused by the initial injury. Paraplegia does not usually supervene. Paresis of one or more limbs, nausea, vomiting, a quick twitching and general prostration may severally or collectively occur. The temperature lowered after the accident may subsequently be found above the normal. Evidences of impaired digestion and assimilation are palpable. The effect upon the sphincters is variable. The degree and duration of general restlessness and nervous insomnia, as well as of the paralysis, depend upon the severity of the shock."

Let us look for a moment at the historical significance of the word "concussion." While this is not directly surgical, it may aid us in arriving at an understanding and correct use of the term.

The English Dictionary, On Historical Principles, by James A. Murray, defines concussion as "The action of violently shaking or agitating; particularly the shock of impact." As applied to surgery, Murray defines concussion as "An injury caused to the brain or spine, or other part, by the shock of a heavy blow, fall, etc."*

Thus we see that there is nothing in our best dictionaries, excepting that given by Foster, to support the use of the word "concussion" as de-

* Definition Historically Considered.—"Looking at the word historically we see that in 1490, Caxton, Eneydos X. 39—Juno prayd the goddys of wyndes that Euryche—Sholde make concussyon and tormente in the ayer.

1541, R. Copeland, Guydon's Formul. U. I. V. Wounds or sores made with concussions or strypes. R. Copland, Gavlen's Therapeutike 2 A. 11 b. The solution of the Contynuyte called ecchymosis, in greke cometh most often from concussyon and rupton.

1651, Hobbes, Leviath III, XLII 303. A concussion of the Heavens.

1656, Ridgley Pract. Physick, 68. Concussion of the brain is made from an external cause.

1760, tr. Juan & Ulloa's Voy. (1772) I VI. I. 306. This terrible concussion was general all over the province of Quito.

1803, Med. Jur. IX. 179. The term concussion conveys not a precise idea of that derangement which is produced in the organization of the brain by external violence, on which account I have been induced to substitute that of contusion.

1823, J. Nicholson Operat. Mech. 647—Less liable to be broken by shocks or concussions.

1847, Smith tr. chelins Surg. I, 411. In concussion there is always tearing of the brain with blood.

1879, Harlan, Eyesight 11, 19. When the retina is irritated by the concussion of the violent blow—flashes of light—result.

1879, Carpenter, Ment. Phys., I, 11, 686 (1879) 72. The spinal cord must have been in a state of concussion."

* Read before the Kansas City Meeting of the Mississippi Valley Medical Association.

scriptive of a special disorder of the brain or spine. In every other definition this word is used to describe the method by which the injury or disturbance was created.

We certainly could not accept Foster's definition as descriptive of a distinct disorder, as he plainly includes hemorrhage into and around the cord, rupture of nerve tissue, paresis and paralysis, as well as the general prostration and other symptoms usually described by various authors as concussion.

Let us look at a few definitions taken from recent works on surgery.

Cheyne and Burghard, in their work on "Surgical Treatment" say that "By the term concussion of the spine, is really meant a condition in which there is a molecular disturbance of the nerve cells, leading to temporary loss of function without any actual lesion."

Park, in his work on Surgery, says of concussion, "We inherit the term concussion from the earlier masters of our art, by whom, however, it was used in a much broader sense than of late. Its modern significance was given to it by Boirel, who made it apply to a group of cerebral symptoms the result of injuries not accompanied by fracture of perceptible laceration of vessels—symptoms varying in intensity and duration." Park does not use the word concussion in connection with spinal injuries, but considers such injuries as contusions. He says, "The existence of contusion of the spinal cord has been questioned, but there is apparently no doubt that a severe lesion may take place in the cord without any external evidence of injury."

Opposed to the views of concussion given by Park, the following from "Albert's Surgical Diagnosis" is of interest, although it refers rather more to the brain than the spine: "The characteristic symptoms of concussion of the brain are evidently a transient condition of depression. If irritative symptoms arise, or the depression grows more profound, the condition no longer is one of uncomplicated concussion. Some other brain lesion then exists. One point requires emphasis. Loss of consciousness, no matter how transitory, must have been present if the condition is to be regarded as concussion. This, therefore, is the most distinctive sign, while slowing of the pulse is the objective symptom."

Thorburn in his classical work on "Surgery of the Spinal Cord" says: "'Concussion,' on the other hand, is used in the vaguest possible manner in the nosology of some writers apparently covering nearly all, if not all, the functional as well as some of the organic traumatic nervous lesions. The classical 'concussion of the brain' is a well-understood affection, representing almost certainly a definitely organic pathology, viz., intracerebral hemorrhages. To such cases it should, I believe, be restricted for the present, as its otherwise vague signification only obscures our views of many affections capable of much more accurate description."

It seems almost equally certain that concussion

of the cord represents as definite an organic pathology as that of the brain; that, as a matter of fact, hemorrhage of the spinal cord is the basis of almost all the cases. The spinal cord is far less liable to injury than the brain on account of its greater protection.

Bailey, in his admirable work on "Accident and Injury," says: "In the chapter on injuries to the spinal cord it will be stated that there is still much doubt as to the existence of any such condition as concussion of that organ. The probability that head injuries may be followed by pronounced cerebral symptoms without there being any discernible lesions in the brain is very much stronger."

"As a designation for a pathological entity the term concussion or commotion of the spinal cord should be limited to such conditions as may occur as a result of injuries to the back, or of general concussion accidents, and which have not been caused by pressure from displaced fragments of the spinal column or by hemorrhage in the spinal canal or into the substance of the spinal cord. The time has gone by when intelligent physicians were deceived by the supposed resemblance between such general functional affections as hysteria or neurasthenia and concussion of the spinal cord."

The following from a new English work on "Surgery," by Rose and Carless, gives still a different definition of concussion: "This condition may be due to severe blows in the back, which do but little damage to the spinal column, or may be caused by accidents which lead to the infliction of greater mischief, but without any serious displacement of parts. The term 'concussion' should be limited to those cases where energetic traumatic influences (falls, blows, collisions, etc.) have given rise to severe disturbance of the functions of the cord without any considerable visible anatomical change in the latter (Erb). In fact, the term is really only applicable to those cases which recover more or less completely; if recovery does not ensue, minute extravasations or other lesions have been present, constituting a condition of contusion rather than concussion. It is somewhat doubtful, however, whether all these cases are not due to minute hemorrhages."

The following is from J. W. McDonald, on "Surgical Diagnosis and Treatment:" "Concussion of the spinal cord is a condition which probably never occurs, owing to the effective manner in which the cord is protected and steadied in the spinal canal. When injuries to the cord arise to which the term 'concussion' seems applicable the accident is probably a capillary hemorrhage, a laceration of the cord, or a vasomotor disturbance with exudation of serum. The symptoms of so-called concussion are those of shock—viz., pallor, nausea and vomiting, syncope, cold perspiration, etc. The symptoms which point to the spine as the cause of the shock are numbness, tingling or even paralysis of the upper or lower limbs, and constriction of the chest. The treatment is absolute rest."

Again I quote from Herrick's "Railway Surgery." "The theory that concussion of the spine with consequent injury to its cord can occur is an untenable one. Protected and suspended, as it is, surrounded by layers of soft membranes and nearly always by a 'water bed' in the nature of the cerebrospinal fluid that fills the canal, there is no possibility that a mere shaking up or indirect force applied to the column, unassociated or uncomplicated with fracture or dislocation, will produce a material injury to this structure, or in any wise interfere with any of its functions. The cases that are reported as such, because symptoms referable to spinal-cord injury were complained of without any bone lesion being demonstrable by physical diagnosis, are in all probability instances of sprain of the muscles of the back, hysterical or psychic affections, in nowise comparable to a true lesion of the cord."

I trust you will pardon this long recital of definitions and descriptions. They are quoted to show the existing misunderstanding of concussion. Each author defines it differently, or at least gives a different description of the signs and symptoms which it embraces. These quotations are made with the hope that we may discover a solution of the tangle into which the term has grown. Does it not plainly teach that there is no such disorder as concussion of the spine?

The matter would be made perfectly plain to everybody if the use of the word "concussion" was confined to the method in which the injury was received, instead of trying to make it also describe the resulting condition. If one will review carefully the various authors on concussion of the spine he will find more or less complete descriptions of sprains of the spine, shock and collapse; hysteria, either acute or chronic; neurasthenia; hemorrhage into the cord or its membranes; effusion about the cord and its membranes; chronic myelitis and malingering. Where there is such a wide diversity of opinion as to the meaning of a word or the description of a disorder, supposed to be described by that word, would it not be better to abandon the use of the word altogether in that connection?

Would it not be better for surgeons to understand that the word "concussion" describes the method by which the injury was received, using other more appropriate terms to describe the resulting disorder?

William Thorburn, of Manchester, England, seems to be the only writer in the English language, as far as I am familiar with the literature, who has made a serious attempt to classify these lesions. In his classical work "A Contribution to the Surgery of the Spinal Cord" he has a chapter on "Traumatic Hysteria, Especially in Relation to Railway Accidents." He classifies the group of post traumatic functional neuroses, usually spoken of under the general term of concussion as follows: (1) "Acute effects," which he subdivides into (a) general nervous depression, shock or collapse; (b) the more localized and defined disturbance of cerebral (cortical)

origin, "acute hysteria" or "hysterics." (2) The "Chronic after-effects," which he subdivides into (a) general nervous depression, neurasthenia; (b) a more localized and defined depression of cerebral (cortical) origin, chronic hysteria.

He speaks of the classification as being tentative and somewhat arbitrary, but convenient for the purpose of reference and description. It will be noticed that two of his divisions, acute and chronic hysteria, are almost entirely of cerebral origin, and have little or nothing to do with the spinal cord.

In looking over the reports of cases given in the literature, as well as recalling cases from experience, one is struck with the large number of cases which show undoubted evidence of injury to the cord, either by direct pressure or more often by hemorrhage, in which there was no evidence of injury to the spinal column. Without having made an actual estimate I should say that fully 25 per cent. of the cases at first diagnosed "concussion," in which operative or post-mortem examinations were afterward made were found to have such lesions. Moreover it is probable that the number of such cases occurring in practice is much greater than even this estimate.

A slight hemorrhage in or about the cord may easily give rise to great disturbance. There is abundance of evidence to prove that there may be extensive contusion of the cord without any external injury. The true pathology of these cases would seem to be hemorrhage of greater or lesser extent, causing direct injury to the nerve fibers and leaving a point of irritation which forms the basis for later symptoms.

In railway surgery, or under any circumstance of violent and sudden shock or jarring, we have added psychical elements, which may far outweigh the true pathology.

Following the conclusions laid down by Charcot in his classical researches we have, in a sudden and severe accident, such as railway collision, all the elements necessary for hypnotism of the patient, and the unnatural sensations in a patient subjected to such an accident easily furnish "suggestion." Thus we have, as a permanent factor in all such cases, "autosuggestion."

It is certainly the duty of the surgeon to use every possible means to eliminate these psychical elements from the case and to discover, if possible, the true extent of the pathological lesion. A given case may be entirely psychical and have no pathological lesion.

Neurasthenia is probably more closely related to the lesion of the cord than the hysterical phenomena above referred to. The use of this term should be confined to the chronic after-effects of such injuries and describe the general nervous depression supervening. By this time it may be entirely a functional matter; the original lesion of the cord having disappeared.

Believing, as we do, that minute or capillary hemorrhage is the true condition underlying these manifestations, we should seek more closely for the truth of each case, and not abandon it under

the obscure and unmeaning term of concussion. Given such a case, the first manifestations will be those of shock.

In describing shock we cannot do better than accept the definition given us by Crile in the admirable work on "Surgical Shock." He says: "Immediate depression or death from injuries or operations was due to one or more of the following factors: (1) Cardiac, (2) respiratory, (3) hemorrhagic, (4) vasomotor.

The phenomena produced by the operation of these factors have so many points in common that they naturally fall into a group and would seem to be appropriately designated as collapse. Later depression or death from injuries or operations and due to a vasomotor impairment or breakdown as the essential factor may be appropriately designated shock. Surgical shock is mainly due to impairment or breakdown of the vasomotor mechanism. All the factors referred to as causing collapse may add to shock."

If the views expressed above are true, our classification of injuries produced by concussion of the spine would be as follows:

Primary effects (1) sprains; (2) contusion of the spinal cord; (3) minute hemorrhage into or around the cord.

Secondary effects or complications, (1) shock or collapse; (2) acute hysteria; (3) neurasthenia; (4) chronic hysteria.

In dealing with a given case we must distinguish if possible between a sprain, a contusion and a minute or capillary hemorrhage. Contusion of the cord, such as would be produced by a dislocation, severe twist or bend of the column immediately springing back into place, would also be accompanied by evidence of sprain. Minute hemorrhage would not necessarily have such evidences along the spinal column, but often result from a sudden shake or blow. While only one of these conditions may be present in a given case, we no doubt have many cases in which all these are present.

Our understanding of these cases will be much more rational and our treatment far more appropriate if we accept hemorrhage as the basic lesion. If we can be sure that we have had no hemorrhage or sprain or contusion then our case is purely psychical, and should be treated as such.

Every surgeon who has charge of railroad cases will remember many which have immediately recovered upon the payment of damages. If time permitted I could report at least three in my past year's experience who have promptly recovered and gone to work at manual labor within thirty days after the payment of damages claimed. In these the injury was accompanied by a small amount of real damage. The "primary effects" were slight, but the "secondary effects" were greatly exaggerated and continued long after the real injury was well. In fact, they only disappeared after an administration of the "gold cure."

I would not leave the impression that all such cases are psychical, but in many of them a pro-

nounced psychical condition is superimposed on a very small and even transient pathological basis.

It is certainly the duty of every surgeon to protect himself, as well as any corporation he may represent, and the best interests of his patient, by distinguishing, if possible, between the purely psychical, secondarily psychical and the truly pathological condition, and our treatment should be made accordingly.

A BRIEF CONSIDERATION OF THE MECHANISM OF MENTAL STATES ENCOUNTERED IN ALCOHOLIC INSANITY, WITH ILLUSTRATIVE CASES.

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As illustrative of a class of cases which at some time during their course are brought to the notice of every practitioner of medicine I have selected from our records the following series: It is true that in their earliest stages they rarely come under observation. Their social complications, however, are commonly encountered, but they bring the subject within the cognizance of the law oftener than to the notice of the physician, so that their medical or psychiatric aspect receives attention, if at all, too late to accomplish more than elucidation of conduct which has brought suffering, or mayhap calamity, upon one or more innocent members of society.

They occur in individuals who have been for longer or shorter periods of time habituated to the use of alcohol, and in whom the mental disorder was manifested in deeds of violence characteristically the product of the morbid mind, yet so little considered from this standpoint that one was tried, convicted of murder and sentenced to life imprisonment, and the others detained for varying periods of time in jails—none of them being sent to a hospital for the insane until time had allowed for development of the later symptoms so unmistakable that the casual observer could read them.

Their legal management and disposition would seem to justify the conclusion that we are to-day further from a true conception of their real nature than was Hippocrates who, twenty centuries ago, said that "men ought to know that from nothing else but the brain come joy, despondency and lamentation, . . . and by the same organ they become mad and delirious." That criticism of the law is justified, may partly be laid at our doors. As physicians we pay greater attention to the examination and analysis of perverted bodily secretions and excretions than to a study of their influence upon the complex and delicate structure of nerve cell, frequently omitting to weigh and estimate the significance of symptoms which indicate involvement of the brain; while these are the less definitely measurable ones of disordered intellect, will, memory, emotions and instincts, they

are as significant of disease as are chemical alterations in the characteristic product of glandular organs.

It is only within the past few years that indubitable evidence has been presented that the brain, as an organ, undergoes pathological changes in precisely the same manner as other organs; that these changes are, according to pathological laws, revealed in disease of these organs, and that just as definite order and sequence of symptoms is to be noted when the brain is involved as when kidney, liver and pancreas are affected by like processes. In the last named organs pathological processes may be well advanced when first made manifest by symptoms; so in the case of brain disorder there is a longer or shorter period in which the morbid can scarcely be separated from the normal—of gradual change manifest only in the most deep-going processes of the patient's nature, at first so vague and ill-defined that even he is unaware of their progressive development, but which later develop into unmistakable symptoms, such as impairment of memory, lessened self-control, disordered perceptions and emotions, ideas of suspicion and persecution, etc. From these earliest subjective symptoms, the existence of which may be known only to the patient, to the violent emotions eventuating in deeds of violence, there is such definite order of development and progression that there is only needed a knowledge of the background of inherited and environing influences out of which they take their rise to enable us to estimate with a considerable degree of precision, their significance and probable outcome—in a word, to give our prognosis as in other diseases.

Alcoholic cases are, as a rule, too complex to be grouped under any simple classification. In their different forms they present symptoms common to other forms of insanity, as well as to each other, with variations depending upon degree and duration of alcoholic poisoning and susceptibility of individual neural tissue. Differences in the effects, both of the occasional and the continuous influence of alcohol have been commonly observed. It has been said that "in every case of intoxication we must study two elements: the individual intoxicated, as to his susceptibility—and the poison ingested, as to its quantity and quality. Every man who alcoholizes himself is not an indiscriminate entity; each one carries a personal element; his individuality modifies the toxic substance quite as much as the toxic substance modifies him." (Lasegue.) The modern tendency is to attribute greater importance, as a factor in the pathogenesis of alcoholic insanity, to the special reactive qualities of the individual brain, than to either the direct toxic action of alcohol or to resulting secondary intoxications²; and in a certain proportion of cases this aspect assumes such prominence as to justify the opinion that the form so commonly met with, that is, systematized delusional insanity, "is never directly caused by alcohol; through its destructive influence, how-

ever, productive of degenerative changes in the mental organization, the paranoiac weakness is brought to the surface." (Dercum.³) Careful inquiry into family and personal history, in these cases, usually reveals evidence of psychical vulnerability. Whether ending in recovery or in chronicity, they present certain features suggestive of their toxic origin, as well as modifications in keeping with those noted in other diseases due to alcohol.

The following cases, which I report in abbreviated form, illustrate the most important clinical features belonging to this class. All had shown marked mental defects at the time the crime or deed of violence was committed, but these seem to have been unnoticed or disregarded by the courts. Because of the too frequent tendency, manifested alike by courts and physicians, to rest content with "the intoxication" as the final explanation and ultimate cause, and not merely as but one phase of the progressive mental degeneration, consideration of these few cases may not be unprofitable.

Case I.—J. B., Negro, laborer, aged twenty-eight years; a periodical drinker. Four years ago was confined for a period of eight weeks in a hospital for the insane. He was brought to Dixmont after five days' confinement in the county jail upon a charge of assault and battery while drunk. The officer who brought him said that while in jail he was sleepless, refused food, smashed cell furniture and was incessantly shouting and screaming, at first as though in extreme fear, but later he became aggressive, declaring that the world was coming to an end—that he was "the black god" who would cause its destruction. When admitted to the hospital he was noisy and incessantly active, but under eliminative treatment, hypnotics and concentrated nourishment he became quiet and apparently rational within 72 hours.

Examination at this time showed that he vaguely recalled events transpiring immediately after his incarceration in jail, but all seemed hazy and indistinct. He said that after three weeks of steady drinking he began to feel nervous and afraid. He could not recall details of the assault which led to his arrest, but said that while in jail he received nightly visits from spirits, who told him he was to be damned; and later, that the entire world was to be destroyed and that he was the cause of it—that he was God. While relating this the patient grew somewhat excited and his manner indicated the existence of suspicions and fears. Questioning elicited the fact that he still heard voices, though unable to distinguish what they said, and that he had heard them every night since his admission to the hospital. He, at this time, affirmed his belief in the reality of all his experiences. Two days later, however, he seemed to recognize the falsity of the sense impressions forming the basis of his delusions, which gradually faded away and, after a few weeks, disappeared entirely.

Representative of a common form of alcoholic

insanity (alcoholic mania), this case presents the characteristic clinical features of suddenly developing hallucinations of sight and hearing. Under the influence of the emotion of fear, which is the outcome of the clouded condition of consciousness so invariably present in this form of insanity, assault upon an imagined enemy is made. Increasing in intensity, it is further shown by his screams and attitude of extreme terror in keeping with the accompanying ideas. The latest stage is one of grandiose ideas manifested in an assertive and aggressive manner as though demanding attention—all in keeping with the delusions which inspire them.

Incidentally, it may be noted that, while following the usual rapid course of such cases, there are here represented the different stages distinguishing the essentially chronic paranoias developed under other determining causes, viz., the early stage in which sensations (special sense impressions) are misinterpreted; next, of "delusive explanation," where sensations and images assume the forms of spirits who apprise him of his fate; and lastly, the stage of grandiose ideas corresponding to the third stage of progressive paranoia, where the conscious or unconscious reasoning is to the effect that, since he is made the recipient of such unusual revelation, he must be a personage of importance—a prophet—God.

Case II.—A. K., aged forty-four years; native of Austria; occupation decorator; has been a moderate drinker. The patient was brought to us from the Western Penitentiary where he had served two years of a life sentence for the crime of homicide. But little has been learned of his previous history from other sources than the patient, whose statement, in effect, is as follows: Sixteen years in this country, he had been regularly employed as a decorator of pottery until six weeks previous to the commission of the crime for which he received sentence. At that time, he was suspended by his foreman because he made demand, accompanied with threats, that patient's brother-in-law be reinstated in a position which he had proved incompetent to fill. Worried and anxious because of said suspension from regular work, he began to suffer vague aches and pains in eyes, head, body and limbs. He said that he would lie in bed all day and worry about his troubles. In the course of a few weeks he was allowed to resume his former duties, but continuing to feel weak and miserable, he began to drink—at first in moderation, but later he gave up work and, for a period of three weeks drank day and night. No history of this period can be obtained from others, but the statements of the patient as to succeeding events so vividly portrayed the mental state induced by long-continued intoxication, and so accurately conform to all that we know of this state, that I give them verbatim. In broken English he said: "I seem not to see just right—same as I did before; but *most of all, I be afraid*. Afraid of everything—of what I see and of what I do not see. I buy a revolver and carry it—I don't know what

for, except because I be so afraid. One evening I went home; I see my own coat hanging on the door, which made me so scared it seem not to be my coat, and I shoot at it. The bullet went through the door and killed my brother-in-law, who was on the other side. I don't know what for I shoot except that I be so afraid. And he my best friend! And the people around—the fools! they let me shoot." From this the patient went on to describe systematic attempts to persecute and to poison him, which commenced soon after he was sent to the penitentiary. Next, of dreams, in which his wife appeared to him during the night to apprise him of these attempts upon his life. At first only during the night, later she appeared during the day, at least he could distinctly hear her voice. In great detail he described how, during sleep, he experienced sharp pains in various parts of his body which he interpreted as attempts to cut him up.

Since admission to Dixmont he has manifested hallucinations and delusions characteristic of paranoia and illustrative of a progressive development from the earliest misinterpreted sense impressions and the ideas to which they gave rise.

This case most vividly illustrates the predominance of the emotion of fear and the powerful influence exerted by it on the falsification of ideas. At first it is without apparent object; the patient is afraid without knowing why, and even seems, at this stage, to have appreciated the groundlessness of his fears. With the accompanying and increasing clouding of consciousness he becomes less and less able to correct by process of reasoning the faulty perception of his disordered senses—distorted by his imagination into foe or terrifying creature, and assault or attack is made in the spirit of self-defense. Under the influence of fear, the harmless object has become the nucleus for the development of terrifying hallucination, the mind adds to sensation its own images and exteriorizes them; these take the place of and perform the duty of sensation.

Throughout its later evolution this case is still characterized by fears, though they are less intense than at first as well as by other features peculiar to this form of insanity. Of particular interest is the phenomena of hypnagogic hallucinations—that is, sensations experienced during dream, or semi-waking states; these are frequently the harbingers of the more pronounced and, as in this case, the permanent alienation which follows acute alcoholic insanity, later developing into definite sounds, such as voices, words and commands, with systematized delusions elaborated from them, in keeping with the dominating emotions, and the ideas which they inspire. The continuity of the earliest manifestations of the acute attack with the pronounced and characteristic phenomena of chronic insanity is also illustrated.

Case III.—S. M. B., aged thirty-six years; occupation, farmer; a periodical drinker. Was brought direct from the county jail where he had been confined for some days. The sheriff who ac-

accompanied him stated that he had been "crazy drunk" for seven weeks, during which period he terrorized family and neighbors by shooting from his bedroom windows; prowling around the house of a nephew armed with a shotgun; attempt to stab a brother-in-law; and finally, by threatening to kill his wife because she was unfaithful. He was mildly excited when admitted, but within twenty-four hours all excitement subsided, and he coherently explained his condition by statements which, in substance, were as follows: "I'm all right now. I guess I was off my base, but that was more because of the medicines I took than the amount of whisky I drank. Then, too, the whisky was practically poured into me by the very people who sent me here. They are conspiring to get my property, and this has been going on for five or six years." Patient described in detail a scheme of his brothers to make his creditors anxious, and have them force a sale of his property in order that they might get hold of it. He then continued: "In regard to my wife—nine or ten months ago I got the idea into my head that she wasn't true to me—I've had it all along—and then, of course, when I'd get drunk I'd think about it more than ever. I don't remember much about what happened for some days before I was brought here, except that they were worrying me back and forth; they kept following me around and talking about me in a way that made me mad, and I believe I told them that if it didn't stop I would do some damage. On the night I was at my nephew's I took my gun with me because I was afraid of skunks; I took it for company."

Though apparently composed, the patient's manner indicated suspicions. He watched every move on the part of those around him; and this suspicious attitude was the chief characteristic of his condition during the first week. Ten days after admission he accused the attendant of giving him poisoned tobacco; he refused to sleep in a certain bed because it contained carbolic acid—voices told him so. At this time he became much agitated, his manner denoting extreme fear. Two weeks after admission he explained a sleepless night by saying that it was "one of his studying nights," following with—"say! what am I taking in that medicine they're giving me?—its such a powerful stimulant I can feel my heart jump immediately after taking it, and it makes me feel queer all over."

During the remainder of his four weeks' stay in the hospital he manifested fewer evidences of suspicion, but became more reticent. At the time of his discharge, however (through *habeas corpus* proceedings), he reiterated the statement that his commitment to Dixmont was a part of the scheme to get hold of his property; and he would not admit that he might have been mistaken in the matter of suspicions concerning his wife, adding, "but I'm willing to look at it in a different light," and gave as a reason for this concession that "fear of punishment would make a man do anything."

A year and a half has elapsed since his discharge. The sheriff, who resides in the town near him, states that the patient's visits to town are made occasions for indulgence in alcohol, and while under its influence he makes threats of what he will do to those through whom he has suffered.

This case presents, in addition to the predominating emotion of fear with clouding of consciousness (by which the symptoms of the acute attack are explained), ideas of persecution, with one of the most frequent early symptoms of alcoholic insanity, viz., gradually developed delusions of jealousy. Kraepelin says that the estrangement naturally arising between man and wife as the result of the chronic indulgence of alcohol and its necessary consequences, is the nucleus about which the delusions of jealousy form. Added to this, Krafft-Ebing lays considerable stress upon the failing sexual powers of the alcoholic; and Berkley explains them by the fact that alcohol first heightens the activity of the sexual instincts, while at the same time it decreases the power of sexual satisfaction, whence arise parasthesias of the genitalia which are elaborated by the progressive mental weakness into delusions."

Well illustrated also, is the abrogation of the higher reasoning or inhibitory powers, resulting in overt acts which are logically the outcome of the delusions presented. With recovery from the effects of acute alcoholic intoxication, normal controlling or inhibitory powers are apparently regained, at least to the point of suppressing, in some degree, the morbid ideas of persecution and the emotion of jealousy with its concomitant suspicions. That these are only suppressed, that is, lessened in degree of clearness by the inhibitory power of other ideas which now exert their influence, is demonstrated by the fact that they recur under the clouding of consciousness produced by subsequent intoxications, when ideas not in harmony with the existing emotions of distrust and suspicion are excluded or do not come to consciousness. Now, just in proportion to the clouding of consciousness and the predominance of the emotional element, there is tendency for these ideas to be transformed into action. With the knowledge, therefore, that the delusive ideas which characterize this case are nearly always permanent, and that alcohol acts merely by removing all inhibition, thus allowing them to come into prominence, we can confidently say that, given to periodical sprees, as he is, this patient is a constant menace to the safety of his family and others.

Case IV.—F. S., locksmith, aged forty-four years. Admitted Jan. 27, 1900. He was brought from the county jail where he had been confined for some time upon a charge preferred by his wife—of assault and battery. The sheriff who brought him said the patient told such a straight and reasonable story that, in his opinion, he was not insane. History given by the patient was as follows: A steady drinker of beer, he occasion-

ally indulged to excess in whisky. He had been in poor health for the last five or six years, and three years ago became so weak that he gave up work and paid a visit to his relatives in Germany. No clear account was given of symptoms experienced during this time and those cited were very vague and indefinite. Patient said that he became "weak, thin, stooped and dried up." Up to this point during the examination the patient's manner was suspicious and guarded, but now, becoming excited, he talked freely, and in his broken English related his story which so typically pictures this class of cases that I give it at length. He said: "My wife never liked me—I don't know why she married me. She often did things she never told me about, and when I find them out she says it is no business of mine anyhow. Maybe this is all right—maybe not. I say nothing until one day I open a letter she gets from her mother in Germany, who writes: 'You watch him; maybe he kill you.' Now, what for she write that way? I always treat my wife good. Soon after this my wife one day say to me, 'Frank, will you paper those bedrooms for me?' I say 'sure, I will;' and she say 'then I'll buy you a keg of beer.' I thought that funny as she never before buy me beer. As I worked at papering the rooms I drank some of the beer, and two days later put in bottles what was left, drinking it during the rest of the week. Now, this is the funny part about it: Always before when I have beer the children—or maybe, my wife—they ask for some of it, but this time they stay away and not ask for it at all; but I think not much of that until I drank the last bottle when I at once get sick at my stomach. I try to throw up, but I cannot. This happened in August, 1898, but I say nothing about it all this time, though I think it very funny." Patient next gave details of wife's attempt to get rid of him by placing poison in his whisky which, after taking, was followed by the same symptoms caused by the beer. This time he accused her of the attempt, which she indignantly denied. Again, some months later (January, 1899), "she bake some bread—she put up my dinner before I go to work. She cut the loaf in half—then one-half into pieces, piling it up so (illustrates). At nine o'clock I eat two pieces—I feel all right; again at dinner and feel all right; but when, in the afternoon, I eat the last two pieces I all at once feel sick. My friend alongside of me—he ask what's the matter? I say, 'there's something in the bread.' He ask me to try some of his; I did so and it feel all right. But pretty soon *the first bread which I eat*—I had examined it and found little red spots all over it—made me so sick that I had to go home. I had pains in my arms, legs, back, and my head felt so big—in fact, I thought I was going to die; but I got home and after lying down for an hour I felt all right. Last week I say to my wife 'I not feel so well'—I buy me a quart of whisky. Where I buy it I get me also a glass of beer; it stayed down. But when I go home and drink the glass of whisky and

water my wife mix for me, I right away feel sick at my stomach. I say to her, 'you poison me, so I kill you for it;' but of course I would not do so; anyhow, she had me arrested and sent to jail. I feel sure she did these things because, always after taking the things she fixed for me I get pains in my stomach and all over my body."

During his stay in the hospital he was a quiet, inoffensive patient, genial and even jovial in his manner toward other patients, as well as toward his wife and family when visited by them. When questioned about family matters, however, he became reticent. Upon two different occasions he was confined to bed with attacks of acute gastritis; following these he was most suspicious of all around him—attendants and patients alike—and for days unusually reticent. At the end of eight months he was discharged by the court which committed him.

Four months later he was returned to the hospital because his family had grown afraid of him; his suspicions had increased and manner had become more threatening. Patient stated that he had taken no alcohol since discharged from the hospital. Examination showed mental state to be the same as at the time of previous admission with delusions of suspicion unmodified. Despite repeated warnings and explanation concerning his mental condition, his wife and relatives again insisted upon removing him, and after a stay of four months, he was again discharged, this time making his home with a brother who lived many miles distant from the home of patient's wife. On Sept. 16 of this year, the patient returned to his former home and shot his wife, inflicting what was first supposed to be a mortal wound. After the shooting he gave himself up, saying he regretted the deed, and is now in jail awaiting trial.

This case furnishes an example of one of the most dangerous forms of insanity developing under the influence of alcohol. It well illustrates the origin of delusions in vague sensory disturbances which, through concentration of the attention upon them, are given an increased importance. Next there is attempt by the reason to explain such perverted sensations, and imagination unites with attention as an excitatory factor. All his own particular associations are now brought in line with the morbid idea, and in this attitude of expectant attention, the most trivial events, interpreted in the light of the prevailing emotions of distrust and suspicion, become convincing proofs that his suspicions were well-founded. With all conscious mental activity now centering about this single idea, it acquires a vividness giving it all the force of conviction and there is needed but a slight access of feeling determined by any chance circumstance and the idea is translated into action with a fatal precision.

Further cases would but multiply these essential phases of alcoholic insanity. The few I have presented will serve to indicate, in a general way, the origin and mode of development of violent

actions in which they so frequently terminate and for which motive is so painstakingly sought. We must regard these acts, not only as the embodiment of the immediate content of the patient's consciousness, but more particularly as representing the final culmination of conditions and causes which have long been preparing the way. They are but visible facts, the result of an immense unconscious working, the complex and invisible causes of which must be looked for in the patient's own organism; this, often defective by heredity, is made more so by habits and mode of living productive of deteriorations earliest manifested in gradually waning control over ideas, emotions and instincts; finally developing into unmistakable disorder in the manner of functioning of the organ through which they all operate. While it may appear that external circumstances so influence and react upon the subject as to engender these latest manifestations in violent deeds, they may be regarded as merely incidental to the abnormal reaction of the defective organism which, with its misinterpreted sensations, abnormal emotions, illusions, hallucinations and, finally, delusions adequately explains all.

As clinical pictures these cases vary apparently within wide limits. There are qualitative differences depending upon variation in original constitution, as well as quantitative differences in keeping with the degree and duration of alcoholic poisoning. In mode of development, however, there are striking resemblances; and in all a definite mechanism, or order of symptoms according to and explained by familiar psychopathological laws.

"In acute alcoholic intoxication (ordinary drunkenness) the cerebral centers are influenced and become overpowered in the following order: at first the most delicate movements become unsettled, the movements of speech, which grow embarrassed, the movements of the fingers which lose their precision; later, the semi-automatic movements that constitute walking; the body reels; still later the intoxicated person is unable to keep his seat, he falls to the ground; finally follows the total loss of reflex motions, the man is 'dead' drunk; in extreme cases, loss even of respiratory movements." In the realm of consciousness there occur phenomena which go hand in hand with these of motor character; in the words of Ribot, they are but two aspects of what at bottom is really a single phenomenon. In the beginning the state of exaltation seen in some men is evidence of weakening of the power of inhibition; men abandon themselves totally to the verification of the dictum, *In vino veritas*. A condition of heightened suggestibility exists, that is, a retrenchment of the field of consciousness and there is tendency for every mental state to work out definite results of its own. It is in this state that men become the sport of impressions of the most opposite kind, often prompted with irresistible force to deeds of violence. Little by little consciousness becomes further obscured and "as a fog about a ship removes it from exact re-

lations to surroundings, so from this standpoint, we may fancy the mind peering through a more or less misty envelope to the true adjustment of things." It is this condition which furnishes the basis for the development of phenomena so characteristic of alcoholism. The states assumed by consciousness float indistinctly about with hazy outlines; impressions received through the senses not only fail to be correctly interpreted, but generate illusions, and later hallucinations, and we have the mental state externalized as phantasmagoria of terrifying character.

In cases of gradual mental deterioration produced by alcohol, there is also definite order of involvement. Long before marked mental disorder is noted there may be manifestations of blunted moral and esthetic sensibilities and change in the normal affections and emotions. These are constantly present and are of extreme value as foreshadowing the graver manifestations of mental disease. With the progress of gradual deterioration there occur morbid ideas, suspicions, etc., in harmony with the patient's "instinctive habit of meditation." Whether these ideas have their origin in some past occurrence, or in some vague sensory disturbance (visual, auditory, sexual, respiratory, gastro-intestinal, muscular, cutaneous) attention and imagination become concentrated upon them. Misinterpreted sensations, as well as "bitter-experiences nursed by brooding thought," gain increased importance and the patient who attempts to understand them, in his state of disturbed consciousness, explains all occurrences in the light of accompanying emotions, which, as in the acute cases, are nearly always in the key of fear. Since "the essence of fear is the feeling that something which we do not understand or cannot control may do us harm," the milder manifestations of this emotion, viz., distrust and suspicion, are explained in the same way as the screams of terror in the patient suffering acute alcoholic delirium, whose disordered perceptive centers and perverted imagination bring him face to face with an invisible horde of terrifying creatures. In their manifestations, however, there is this difference: In the acute cases instinctive acts of self-preservation follow the sensory stimulus which evokes the idea, with the promptness of any reflex act, and this because there is abrogation of all the higher restraining or inhibitory faculties. The cases of ordinary intoxication so commonly seen, furnish abundant illustration of prompt translation of ideas and emotions into acts, and there are all gradations from these to the cases of slower development where we see misinterpreted sensations and images elaborated into delusions, with the higher reasoning faculties becoming more and more involved until, finally they are so profoundly implicated that they are not to be reckoned with as inhibitory or restraining forces; the emotional element, now in full sway, impels to the commission of acts which are the logical outcome of the idea to which the field of consciousness is narrowed. This, briefly, is the mental mechanism, even of

those cases where purpose and motive have apparently been present. While these latter are more difficult to comprehend, they differ in degree rather than in kind from those manifested in acts which are not the result of design or conviction. They all lead to acts of self-preservation and are thus seen, in their last analysis, to be instinctive.

I have referred to the barest elements in the psychological mechanism of these cases. By appreciation of the relations existing between apparently remote phenomena, we arrive at accurate knowledge of mental states, with their mutually influencing neuritic activities, and they must be correlated with the profound nutritive disturbances and the structural changes found in the cells of the cerebral cortex, which are their physical bases.

That cases so exaggerated as these I have reported are habitually left to the tender mercies of the law, must be a reproach to medical science, whose duty it should be to interpret and explain them. Despite the fact that they evolve in precisely the same manner as other diseases, with influencing factors of heredity and final determining toxic cause, their early manifestations in perversions and alterations of the characteristic products of the organ involved are not so generally understood as are symptoms indicative of change in other organs, so diagnosis often is not made until after complete development of the disorder. A method which we would hold to be inexcusable, or even culpable in our dealing with other diseases is thus often followed and accepted as a matter of course where there is question of disease in the most complex organ of man.

Without a more general knowledge of the laws which govern the mental mechanism in health and disease, early deviations in ideas, emotions and instincts (from whatever cause), must pass unheeded when appreciation of their significance would not only enable us to ameliorate the mental disorder, but in many instances to prevent it from reaching a dangerous development, or at least, to guard against termination in deeds of violence. The law (in the words of Mickle) may disregard these important earlier indications of disease, but of them clinical medicine must have a care.

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SCOPE OF THE VAGINAL SECTION.*

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THE naming of the subject for discussion does not seem appropriate to me. "The scope of vaginal operations" would, in my opinion, be better fitted. It is evident from the views expressed by some gynecologists, notably of this city, that a decided change of opinion has taken place of

late years. It is probably still within the recollection of members of this section and those of the New York Obstetrical Society that the position held by me was that the vaginal route should always be that of choice, if it be possible by this route, to do the operation intended, rather than to select an abdominal incision. Some years ago the views which I held were opposed by able papers and discussions by gentlemen whose views are worthy of the highest consideration. Abdominal technic was advocated by the speakers, yet scarcely eight years have since passed and now the greatest enthusiasm in favor of the vaginal route is expressed by some of the former antagonists of this method, while my experience leads me to modify my opinion.

I am of the opinion at present that the scope for the applicability of vaginal operations is made even greater in some instances than is justifiable. It should not be doubted by any one who will reason that it would be more desirable to do an ovariectomy per vaginam than to perform this operation per abdominal section, provided it may be done with equal safety through a vaginal section. It is evident from this hypothetical example that the scope of vaginal operations must necessarily be a matter of judgment of the individual operator. It could therefore not be expected that definite rules should be presented, by which all operators should be governed.

As to my present views, compared to those previously held, I would say that, after a careful study of the subject, based upon more than five hundred vaginal sections, in the sense that this term is understood by me to be employed in this discussion, I have come to the conclusion that its application is more limited than I had at one time supposed it to be; in other words, after ripe experience, I would now give preference to an abdominal section in conditions where I would formerly have advocated an operation per vaginam.

Let us consider individual conditions. First among these I will mention suppurative salpingitis. Whenever the fallopian tubes are on the floor of the pelvis, and this is usually the case, and if the illness be acute, it is preferable to open the cul-de-sac, incise the pus tubes and drain them. This, however, requires good judgment as to the technic to be employed in individual condition. Suppose there is pyosalpinx either unilateral or bilateral, and that it is evident that the pus sacs may be readily approached per vaginam, but that the general peritoneal cavity is not walled off by pelveoperitonitic exudate. After opening the cul-de-sac of Douglas in the median line, which I prefer to do with a perforating dilator (a Palmer uterine dilator with the ends ground off to a sharp point) and then to stretch the opening with a proper dilator to such extent that the pelvic organs may be palpated; the pelvic cavity above the tubes is then walled off with sterile gauze, then the fallopian tubes are opened and after the pus has made its exit a strip of gauze is, if possible, inserted into the opening made into the tube. The vaginal opening is also packed

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with gauze to check the oozing from the vaginal wound and to keep the opening as large as it was when made with the dilator. In case a larger vessel should bleed, it must be sutured. The dressings are changed every day or every second day, according to the amount of secretion formed. The pus cavities are washed out with an antiseptic solution before fresh gauze is inserted. This treatment is continued as long as pus is formed, after which the openings are allowed to close. If an exudate is present which walls off the general peritoneal cavity, the gauze packing above the pus tubes is unnecessary.

The question naturally presents itself as to what are the chances of a patient's recovering her health if such procedure be employed? As to the prognosis for the life of a patient, it is, so far as my knowledge goes, good. I have not lost a patient after such surgical intervention, neither am I aware of a death at the hands of any other operator; so that the important consideration is the relief of the patient of disease symptoms. My experience in the patients with pyosalpinx conservatively operated upon in the manner described is: Nine out of the 37 were symptomatically cured. Fifteen were improved to such degree according to their statements that they declined further surgical intervention. Five were not benefited at all as to their symptoms and were subjected to radical operations subsequently. Eight were lost for further observation. This is a comparatively small percentum of recoveries, and one might ask why perform such operation at all, when a more radical operation is more likely to give a perfect result, so far as the relief of symptoms is concerned, in probably three times as many patients. My answer is: It is time enough to do a more radical operation later, should a patient not get sufficient relief; and furthermore the danger of a radical operation is not increased if one endeavors to bring about relief by first doing a simple conservative vaginal operation, and finally, the direct danger from such operation is practically nil. I doubt that tubes operated upon in this manner ever regain a perfectly normal condition; they are, however, sometimes restored to a condition in which the patients are symptomatically cured of their ailment, and they may possibly become pregnant.

In instances of ovarian abscess the vaginal operation with incision and drainage is also to be recommended if the abscess can be readily reached through a vaginal section. In fact, in all instances of pelvic suppuration, if it be evident that the pus can be reached by means of a vaginal section, that method should be preferred.

So far as conservative surgery upon the uterine adnexæ is concerned, it is my opinion that, with the exception of such instances of pyosalpinx as have been previously described, better and more conservative surgery could be done, if an operation be at all indicated, by reaching the inflamed adnexæ by means of abdominal celiotomy, than could be accomplished through a wound made by vaginal section. To illustrate

this: Fallopian tubes are sometimes so extensively diseased that their removal becomes necessary because of the symptoms which they cause, yet the ovaries, one or both, may be in such good condition that it is feasible to save them. By abdominal celiotomy I have sometimes been able to do this. Only a few months ago I presented two large pyosalpinx sacs at the Obstetrical Society; the ovaries in that patient being macroscopically normal, they were sewn into the cornu of the uterus from which the tube had been resected. From a recent report I learn that the patient is feeling perfectly well. Such course could not have been pursued per vaginam; nor is it likely that the feasibility of saving the ovaries could have been established by a diagnosis made by vaginal section.

The treatment which is quite generally adopted in such instances is to remove the uterus and adnexæ. Does not even one such instance prove sufficiently that vaginal celiotomy cannot replace abdominal celiotomy for conservative operative procedures on the adnexæ? I could mention a number of such operations in my practice, not to speak of the numerous similar experiences of Dr. Palmer Dudley and some other members of this Academy. This, therefore, proves that it is the exact pathological condition of a lesion and not a general lesion which should indicate a vaginal operation.

Should it be found that diseased ovaries, not the seat of large neoplasms, are causing sufficient symptoms to give an indication for operation upon them, either anterior or posterior colpopelvicotomy, as the circumstances may indicate, should be the intervention of choice.

All ovarian tumors not exceeding six to eight inches in diameter and reaching to the floor of the pelvis are suitable for approach by means of vaginal celiotomy, although it may, in some instances be necessary, if the adhesions are too firm to be separated from below, to resort subsequently to an abdominal section.

While vaginal celiotomy is resorted to quite frequently for tubal pregnancy, especially in Germany, I, after having tried it seven times, have not been favorably impressed with the procedure. I would limit it to those patients who have a well-defined pelvic hematocoele if an indication be at all given for surgical intervention in a particular patient, and to those in whom the diagnosis is made before rupture of the tube.

The presence of uterine myofibromata is occasionally an indication for vaginal operations. While submucous and sometimes interstitial tumors are a proper indication for resorting to this method of surgical intervention, yet if conservative surgery, namely, myomectomy is to be done, it is my experience that these neoplasms can be better treated by conservative methods if approached from above. I would limit for conservative surgery by means of vaginal operations, neoplasms which are submucous; neoplasms which are on the anterior wall of the uterus, of small size but causing irritability of the bladder;

and small subperitoneal tumors which are in the cul-de-sac. For radical operation, such tumors which do not reach beyond the true pelvis, and only then if the vagina is voluminous enough to permit of the work being done without making deep incisions for the purpose of enlarging the field of work. I have seldom seen a small subperitoneal or an interstitial neoplasm give rise to sufficient symptoms to justify any kind of surgical intervention, unless they be situated on the lower part of the anterior uterine surface.

Displacements of the uterus have frequently been an indication for colpopelviotomy, by one or another procedure. Shortening of the round ligaments may rightly be claimed as the most desirable by the advocates of vaginal operations for backward displacements. Since the time when Dr. Bode, of Dresden, did his first vaginal shortening of the round ligaments in 1895, the technic has not been materially improved upon, not even by those who did this operation at a later period. The question of importance, however, is whether vaginal celiotomy is superior to, or even as good as, abdominal celiotomy if an operation be at all indicated for the respective backward displacement. I have given up vaginal operations for backward displacements, preferring shortening of the round ligaments by other methods. My reasons for this are that I find that mobile displacements do not require opening of the peritoneal cavity at all, and patients with firmly fixed uteri can be more conservatively managed from above. If, however, a vaginal celiotomy be contemplated because of another pathological condition, as for instance a myomectomy for a small myoma, or the removal of an ovarian cyst, then, if a displacement be present, shortening of the round ligaments should be done at the same time through the vaginal incision.

The operations for ureterocystostomy per vaginam, and vaginal hysterectomy for cancer, depend as much upon individual circumstances as the operations on the uterine annexa.

I do not see an indication for a vaginal section through the cul-de-sac with subsequent drainage, in instances of septic puerperal infection unless there be an exudate in the pelvis.

THE SCOPE OF VAGINAL SECTION.

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FIRST let us come to an understanding as to what is meant by the term "vaginal section." As the term is usually employed, the operation of vaginal hysterectomy is excluded, so also are the operations which are performed for the correction of a uterine displacement through the vaginal route.

Excluding these, vaginal section finds its scope in the following conditions:

1. *Pelvic Abscess.*—In cases of simple pelvic abscess, where the collection of pus has occurred in the cellular tissue of the pelvis. When the

collection exists in Douglas's cul-de-sac, as is frequently the case, the section is both easy and simple. On the other hand, when the collection has taken place at either side of the uterus, in the base of the broad ligament, the vaginal incision is attended with considerable risk, notably from hemorrhage, as there is great danger of cutting the uterine or some of its branches, an accident which has occurred in the hands of the most expert operators. The guide given to avoid this accident by making the incision posterior to the center of the cervix is not always easy of execution.

When the collection is in front of the cervix the position of the bladder has to be taken into consideration. It is safer to make a transverse incision on the anterior part of the cervix as one would for a vaginal hysterectomy, and carefully push the bladder upward. If in spite of every precaution an opening is made into the bladder it will depend upon the local condition whether the opening should be sutured at once or left alone in the hope that it will heal spontaneously.

2. *Pyosalpinx and Ovarian Abscess.*—Now when a collection of pus has occurred within a tube, as in the case of pyosalpinx, or within an ovary, as in the case of an ovarian abscess, or within both, as in the case of a tubo-ovarian abscess, the question of the indications for vaginal section cannot be decided in so off-hand a manner. In my opinion vaginal section is indicated in these lesions only under certain conditions: (a) When the abscess sac is easily reached through a vaginal incision and can be removed entire; in other words, when it is situated in Douglas's cul-de-sac and is fairly movable. (b) When the sac is not large and can be removed readily through an anterior vaginal incision. I have succeeded more than once in removing a supposedly gonorrheal pyosalpinx in this way without rupturing it, and with a perfectly normal recovery of the patient. I should be loath to attempt the removal of an ovarian abscess in this manner for fear of rupturing the sac and infecting the peritoneum. (c) In pyosalpinx and ovarian abscess, during the acute stage, vaginal section is indicated if the collection of pus be accessible through a posterior vaginal incision, simply to tide the patient over the dangerous period. In some cases when the pus sac is unilocular and favorably situated the vaginal section may prove to be not only a palliative, but a curative measure. But in a large percentage of these cases a secondary operation will need to be performed later on. There is a class of cases of acute and subacute pyosalpinges which it is the custom at the present time to treat palliatively for weeks in the hope that in time the pus will become sterile. These cases, in my opinion, can be safely attacked through a vaginal and abdominal section combined. By pursuing such a plan the patient is saved a long emaciating illness in bed, and sometimes from an extension of the lesion through repeated attacks of inflammation during the waiting period. I will cite a case under my

care at Mt. Sinai Hospital during the past summer as illustrative of my meaning. The woman was curetted six weeks before by a physician as a cure for her sterility. This was followed by fever and pain in the right groin, and the patient had to keep to her bed. At the time of her admission to the hospital she was very feeble, anemic and emaciated, with a temperature of 103° F. and a pulse of 120.

On bimanual examination I could feel a mass the size of a closed fist pretty high up and giving a sense of fluctuation, and made the diagnosis of tubo-ovarian abscess. I placed the patient under palliative treatment in the hope that the acute symptoms would subside. But the patient's condition did not improve. On the contrary, she was growing worse. I decided therefore to make an attempt to open and drain the tubo-ovarian abscess through the vaginal route. Working very cautiously and with considerable difficulty, I succeeded in entering the abscess and evacuating about eight ounces of pus.

A few hours later the patient had to be returned to the operating room on account of hemorrhage. Thinking it came from the vaginal incision, I sutured this, and still the hemorrhage continued and seemed to come from the interior of the sac which I had packed very tightly with gauze. I hastily ligated the uterine artery on the same side, with apparently no effect upon the hemorrhage. There was nothing to be done now but to open the abdomen rapidly and enucleate and remove the tubo-ovarian sac. The hemorrhage then ceased, and the patient made a slow but satisfactory recovery. At no time subsequent to the operation was there the slightest peritoneal reaction. This plan of procedure which was forced upon me in that instance I have since adopted in similar cases with the most happy results. In that way I have curtailed the period of confinement to bed, prevented a probable extension of the inflammatory process, and saved the patient the mental worry and shock of a second operation with its attendant dangers and subsequent complications. I feel confident this method must find favor in the eyes of operators in the future. In some instances it may prove to be wiser to first open the abdomen, so as to be able to reach the pus collection from below with the greater certainty and safety, having one hand on the abdomen as a guide. By using rubber gloves in the first steps of the operation and then discarding them or replacing them with a fresh pair, the risk of contaminating the general peritoneum by the operator or his assistants can be reduced to nil.

3. *Conservative Surgery in Diseased Adnexa.*

—Vaginal section finds a suitable field in a certain class of diseased appendages admitting of conservative surgery. The cases require to be selected, but after one has gained some experience in the selection of his cases and has acquired some skill in operating through the vaginal route it is seldom that he will make a mistake in setting the indication. I would exclude all cases in which there were extensive and firm adhesions and

where there were evidences of marked infiltration of the broad ligaments. In these cases better work can be done from above. I was among the first in this country and elsewhere to practise conservative surgery upon the adnexa through the vaginal route, but I recognized from the outset that the method could be used to advantage only within certain limitations. To use it indiscriminately in every case, to my mind, entails bad surgery and brings discredit upon the method. Vaginal section should not be the method of choice in the foregoing conditions when there are any evidences of involvement of the appendix. These evidences can usually be found when searched for in the previous history, in the situation of the pain and the points of tenderness on abdominal palpation. When the appendix is involved there will as a rule be decided tenderness in and about what is known as the McBurney point.

4. *Ovarian Cysts.*—One meets with a number of ovarian cysts of moderate size which can be readily removed through a vaginal incision. The removal of ovarian cysts per vaginam has been done a great number of years ago. I believe Dr. T. G. Thomas removed an ovarian cyst by this route over twenty years ago. But before deciding upon this route one should be reasonably certain that he is dealing with a simple cyst and not with an abscess of the ovary.

5. *Myomectomy.*—Small fibroid growths in the anterior wall of the body or fundus of the uterus constitute a suitable field for the vaginal route. Growths in the posterior wall, if they are situated high up, had better, in my opinion, be removed from above. When one attempts a myomectomy through the vaginal route the entire uterus should be brought into the vaginal incision so that every growth can be detected and removed.

6. *Ectopic Pregnancy.*—Vaginal section, in my opinion, is indicated in ectopic pregnancy under the following conditions: (a) In obscure cases to aid in forming the diagnosis. It is now over three years since I have adopted this procedure and drew attention to it in a paper read before the New York State Medical Association at its annual meeting, Oct. 15 to 18, 1900.*† In spite of the assertion of many authors that ectopic pregnancy manifests itself by certain pathognomonic signs and symptoms cases are not infrequently met with in which the diagnosis is difficult and uncertain. It is a great aid in these cases to be able to clear up the diagnosis by a simple incision into Douglas's cul-de-sac through the posterior vaginal vault. But having gained the desired knowledge by noting the presence of free blood in the peritoneal cavity it is a dangerous procedure, to my mind, to be lured to make the attempt to remove the ectopic sac through the vaginal incision. In fact, no manipulation should be practised for fear of setting up fresh hemorrhage which might prove fatal, as it has done in some reported cases, before it could be arrested through an incision of the abdominal wall. (b) In cases of ectopic preg-

* Journal Medical Association, May 11, 1901.

† Dr. E. H. Grandin has also drawn attention to the value of this procedure in this class of cases.

nancy when evidently there are no further hemorrhages and when the already effused blood has formed a hematocoele in Douglas's cul-de-sac or at the base of one of the broad ligaments. In many of these cases the vaginal incision and drainage prove to be curative and the patient makes a satisfactory recovery. In others, again, the affected tube is the source of future trouble, which subsides only on the removal of the tube, together with the corresponding ovary, when it is either the seat of a pathological lesion or so embedded in adhesions and exudates as to be indistinguishable and unfit for conservative procedure.

It is a good plan to pass the fingers into the cavity of the hematocoele for the purposes of exploration. If a mass be found projecting from its upper wall it is usually the ectopic sac containing an organized blood clot. In such a contingency I deem it safer to open the abdomen from above and remove the mass. When this has not been done I have known serious hemorrhage to recur after the patient had been returned to bed.

HOW EASILY WE CAN BE MISTAKEN IN THE DIAGNOSIS OF CANCER OF THE STOMACH.

BY MARK I. KNAPP, M.D.,
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GIVEN the following hypothetical case: A patient possibly about middle age, not very robust, comes with the following history: Sick with dyspepsia for a long while, most likely for many years; appetite usually quite good, but, of late, comes and goes, at last leaves entirely. Is troubled with bad taste, nausea, coming up of foul-smelling gases, belching up of bad tasting, sour material; pain in the stomach, dryness in the throat, and thirst; disturbed sleep; fullness and pressure in the stomach, foul-smelling winds; a variable condition of the bowels, diarrheas preponderating; very frequent vomiting of a dark red or chocolate-colored material, while at times bright red blood is also vomited; the pain in the stomach is apt to be quite severe and there may be some emaciation noticed. The patient does not look very healthy, there is a certain doubtful hue to the color of his skin. The patient is undressed, and the fingers of the experienced physician who has finally mastered that subtle art of palpation detects a certain resistance in the supposed region of the pylorus. The more he palpates, the firmer his conviction that he has to deal with some sort of a tumor of the pylorus. A test meal is advised, but the patient at once repudiates such a barbaric, inhuman procedure. Well, "the clinical symptoms are quite convincing," meditates the consulted physician, without, however, betraying his thoughts at once. Finally, the diagnosis is asked of the physician before whom the "chocolate-colored vomit, the pain in the stomach, the tumor and the alleged slight emaciation" prominently stand in the foreground. The physician, imbued with the severity of the case, pauses ominously, then halts deliberately after each word, weighing each word

significantly, and finally answers that there is positively a dangerous condition, most likely a carcinoma of the pylorus. Having come to such a conclusion he most likely urges a speedy operation, as the patient seems yet to be in a fair condition, consequently has better chances for recovery. At the same time the physician certainly does not neglect to bring before the attention of the patient and his friends the grave consequences that are likely to follow if an operation is not immediately performed. As a rule, the patient does not relish such advice, and, as is very apt to happen in nine cases out of ten, he will not at once go under the knife, but will "try a little longer." The patient, incited by the Job's news, solemnly resolves to rigorously observe common-sense laws of dietetics for a little while before submitting to the inevitable scalpel. The patient goes along for a week or so on abstemious habits, anxiously awaiting the outcome, in the meanwhile watching closely the effects of his experiments. A week passes and the patient believes he feels a little less of the misery, or, so he imagines. This inspires him with renewed hope for his possible recovery without the intervention of surgical skill. He persists in his regimen. After another week he is positive that he feels slightly better, and after a few weeks more of "strict dieting" the patient is absolutely convinced that there is nothing more the matter with him. However, to make sure he again seeks the advice of his last physician, providing he still reposes sufficient confidence in him. But possibly this visit may have a different motive; it may have a certain suggestion of the reproachful substratum of "I'll-show-you-fellows-you-don't-know-nothing-anyhow." The physician, an honest and conscientious man, sees, examines, marvels and makes the mental remark "another miracle in medicine." He is baffled by the rapid and the undeniably excellent result. The physician reflects over this case once more and the threatening undercurrent of self-reproof for not having insisted on a test meal examination is quickly brushed away by the mental question, "With such clinical symptoms as this patient had what else could it have been but cancer?" This unuttered question soothes his troubled conscience and the physician, evidently mocked, feels happier when the door finally closes behind this dubiously welcome patient.

What was the matter? In view of the fact that this hypothetical patient fully recovered, in view of the further fact that cancer is not known to be a benign affection, it must be assumed that there was an error in the diagnosis. And yet it is a fact beyond the shadow of a doubt that this hypothetical patient did have pain, did vomit chocolate-colored material and possibly also some bright red blood, and, furthermore, it is a fact that the palpator did feel a resistance, a tumor, in the region of the pylorus. How often has one met with just such a clinical history? And yet, although the cardinal clinical symptoms of cancer are here present, the patient never had even a trace of cancer.

In substantiation of this hypothetical case I will give the histories of two patients, one a case of my own, and the second, one of the reported cases of Professor Obrastzow (*Ueber die Palpation des Pylorus*, *Deutsche medicinische Wochenschrift*, Oct. 23, 1902).

Case I (Reported as Case IV. in my article on "Gastrosia Fungosa," *American Medicine*, Jan. 10, 1903).—Mrs. Lena S., twenty-eight years old, Russian, two children, pregnant five months. Pressure in the stomach, especially in the morning about three o'clock; pain in the stomach and palpitation, preventing sleep for some two hours; also vertigo and fainting spells. Has had epileptic fits at night quite often for the last three years. Appetite is usually good; must urinate frequently; movements of the bowels at night "catch her." During attacks of palpitation she must sit up, stem her feet against a chair, bend forward and with her hands press upon the epigastrium. Is easily excitable and has a bad and bitter taste. Drinks coffee, two or more cups about 8 A.M. For the past two or three years has been unable to eat any sweets; was treated for asthma. Both kidneys and spleen palpable.

On March 11, 1902, she came for an examination on a fasting stomach after an attack of nocturnal epilepsy, having had three fits the previous night. The fasting stomach yielded about 75 c.c. of dark-red contents which, from physical appearance, could be taken for a hemorrhage. The odor was pungent sour. The color was due to the enormous mass of mold of the dark-red variety. Under the microscope there were seen very fine beaded bacilli, greenish-yellow mold, circular purple bodies, no sarcinae and very few isolated yeast cells. The patient was so exhausted and somnolent that she fell asleep while I was examining the aspirated contents under the microscope; she was entirely dazed. Under such conditions I did not care to give her any test breakfast. Her urine showed albumin. On March 16 examination of the stomach (the patient having fasted) showed no contents, lavage.

March 17 examination under the same conditions showed about 10 c.c. mucus; tropeolin positive.

March 18 examination after fasting found no contents; test meal aspirated half an hour after eating gave 75 c.c., mucus present, no special odor, no tropeolin reaction; acidity with dimethyl 32, general acidity 70. On March 23 she again came, complaining of having premonitory signs of the coming of epileptic fits; had had milk and roll about 10 A.M. I then (2 P.M.) aspirated but found stomach empty; admitted having had beer and grape wine the day before. On March 24 she came to report, having had a very bad night, could not sleep at all, but had no epileptic fits. Had only a cup of milk for breakfast; aspiration (2 P.M.), no contents. On April 5 reported not having had any epileptic fit for the week ending that day, although she expected it. On April 7 she felt bad and slept till 11 A.M., after which she took hot milk and water. As-

pirated (2:30 P.M.) about 120 c.c. which gave free HCl 36, organic acids 28, general acidity 132. On May 2 it "caught" her very badly in the daytime, but she had no epileptic fit; this came after drinking "barshch," a sour beverage made from red beets. On July 1 the patient came to report to me that she was delivered of a healthy boy June 16, both the delivery and the boy being in undeniable evidence. She has felt very well all the time.

We see here perfect recovery, notwithstanding the very trist clinical picture of marked interference with the digestion, pain, the aspiration of a chocolate-brown material—this accompanied by pregnancy and albuminuria. I do not remember having felt anything in the pyloric region. We see that the patient's condition varied during the treatment, but this was due to the fact that she was not under my control. This densely ignorant patient, who believed her periodically returning trouble to be influenced by, if not due, to the full moon, did some experimenting on her own responsibility, but failed every time.

Case II. (This is a translation of part of the history as given by Professor Obrastzow. I give here only that part of the history which bears upon the question at issue).—Student, male, twenty-one years old, came to consult me May 30, 1901. Sick for the last three months. Began to feel nauseous at the beginning of March, knowing no cause for it. The nausea was usually preceded by unpleasant, spasm-like sensations behind the sternum along the esophagus. The nausea usually came on a fasting stomach or after severe exercise, and was often accompanied by foul-smelling eructations. These attacks of nausea lasted till April 3, after which violent pains in the abdomen after each meal and vomiting every day were added to the nausea, the vomiting bearing no strict relation to the meals or the time of the day. The vomited matter was almost always of a "chocolate color" and emitted a very pungent, raw-fish odor. Blood could not be discerned in the vomited matter. The appetite was lowered. To prevent pain the patient took liquid food, but without avail. The feces were at first hard and of a black color. Bowels moved once in two or four days. In his childhood the patient had measles and typhoid fever. In 1897 and in the beginning of 1898 the patient coughed; several times hemoptosis. No hereditary taints. Since the beginning of his sickness the patient lost 15 pounds. Syphilis and alcoholism denied. Status praesens: stature and weight much below the average. Tongue dry, white covered. Posterior pharyngeal wall reddened. Heart covered by the lungs, heart-sounds pure. In the right apex diminished vesicular breathing without any râles. Examination in the horizontal position: abdomen not distended. At times a visible tumor appears below the right border of the ribs in the region of the epigastrium, which could be palpated and which gives to the palpating fingers the sensation of creaking snow. The shape of the tumor is that of a cylinder about 5 cm. in diameter run-

ning on the right side from above and outward, downward and inward. The tumor is palpable 6 cm. to the right of the median line. The tumor is moderately movable, tender on palpation.

Microscopical Examination (of test breakfast).

—Few saccharomycetes, small number of short bacilli and of cocci, no thread bacilli. Odor of raw fish.

In June and July the patient practised lavage on a fasting stomach. In June was in bed for about 14 days. In July the nausea disappeared and there had been no vomiting since June till the time of this patient's visits, Sept. 25, 1901. At the beginning of August the pains disappeared, and since then the patient has felt very well. The appetite is excellent and he is no longer particular about his meals. The patient gained 19½ pounds.

In discussing this case, Professor Obrastzow points out how easily it could have been mistaken for cancer, his patient representing all the symptoms of cancer.

In both these cases we find what is alleged as being the "cardinal" symptoms of cancer. Actually, however, both are excellent examples of "gastrosia fungosa," one of the subdivisions of organacidia gastrica, described by me (*N. Y. Med. Rec.*, Sept. 6, 1902). The only drawback to a sure diagnosis of cancer is the youthful age of both patients. Nevertheless, cancer may occur in even younger individuals—rare, it is true. In my own case the nature of the chocolate-colored contents is given. It is due to the immense crop of the dark-red mold variety. Obrastzow mentions the presence of short bacilli and of cocci, but says nothing of dark-red mold (my article on organacidia gastrica and gastrosia fungosa, which I hold to be original, and which treat and demonstrate the presence of mold in the stomach and its deleterious influence on the function of the stomach, were published only very recently and could not have possibly reached Professor Obrastzow when he wrote his treatise). Both patients here reported are young, but I have seen the dark-red mold many times in quite appreciable quantity in patients of middle age as well as older. Nor is there any reason why this mold variety could not occur and grow in the stomachs of persons of any age. Case II. brought up bright red blood. This undoubtedly came from somewhere between the stomach and the oral cavity. In my original papers the vomiting of bright red blood is mentioned and explained as possibly coming from hemorrhagic erosion—ulcer—of the esophagus, a condition not rare in organacidia gastrica.

These two cases teach us not only not to be overhasty in our conclusions, teach us not only not to make a diagnosis on "what else could it be," not only teach us that a diagnosis of cancer of the stomach must never be made, unless a test meal examination is made (test breakfast), but also teach us the apparently grave clinical picture gastrosia fungosa may give. These two cases certainly do teach us that chocolate-colored vomit does not necessarily mean blood. Professor Obrastzow demonstrates that the tumor felt by

him was the pylorus. In fact, many times I have felt what appeared to be a tumor but I never was sure what it was. But he likewise demonstrates that the tumor felt was nothing more than a spastically contracted pylorus. That the pylorus under such conditions—organacidia gastrica—does contract spastically I have especially dwelt on in my articles "Insufficiencia pylori as a Sequela of chronic gastritis" (*Philadelphia Medical Journal*, May 24, 1902), "Organacidia gastrica" (cited above), and "Further remarks on insufficiencia pylori" (*New York Medical Journal*, Oct. 4, 1902). In these articles I have fully discussed the "why" and "how" the pylorus spastically contracts. These spastic contractions of the pylorus I have termed "stenosis pylori ab irritatione," which condition stands now corroborated by Boas (*Ueber Magensteifung; Deutsche medicinische Wochenschrift*, March 6, 1902) and now by Obrastzow.

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THE OPERATIVE TREATMENT OF FRACTURE OF THE PATELLA.*

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To discourse exhaustively upon all the various operative procedures employed in the treatment of fracture of the patella would trespass too much upon your good nature and occupy more time than has been placed at my disposal this evening. Therefore I will limit myself to three headings: (1) the advisability of operative treatment; (2) the technic of the procedure employed by myself; and (3) a brief résumé of those cases upon whom I have operated and of whom I have been able to collect reliable data.

Advisability of Operative Treatment.—There are a certain number of cases of fracture of the patella in which operative treatment is contra-indicated. These cases are to be treated by apparatus. They include those suffering from intercurrent disease of such a nature as to prohibit operative interference of any kind and who prefer to pass the remainder of their lives partially disabled rather than risk an operation the mortality of which while small is still of sufficient weight to deter the timid. Longitudinal fractures do not require operation; in comminuted fractures operation is inadvisable except in selected cases when circumsuture may be employed; neither do transverse fractures in which rupture of the capsule has not occurred require operation. This last condition is extremely rare and will be evidenced by slight separation of the fragments, the absence of tilting of the fragments, and but slight effusion into the joint. The aponeurotic structures to either side of the joint will be found intact.

In order to emphasize the importance of opera-

* Paper read before the Brooklyn Medical Society, May 16, 1902.

tive treatment we must consider the pathology of the fracture. In simple transverse fractures there are three factors which prevent accurate or bony union. First, the separation of the fragments due to the action of the quadriceps extensor and the effusion within the joint. The extent of the separation is determined by the extent of the tear in the fibrous structures overlying and bordering upon the patella. Second, the interposition of periosteum and torn capsule between the fragments. As the periosteum is torn at a lower level than the line of fracture it follows that the torn periosteum curls over the fractured surface of the upper fragment. Third, there is a tilting of one or both fragments. We have, then, three bars to accurate approximation, one of which, the interposition of torn capsule and periosteum, forms an unsurmountable obstacle to bony union. From the pathological conditions present the indications are absolute.

Let us go further, however, and study the result of treatment by apparatus. Fibrous union must result except in those few cases in which no interposition of torn periosteum and capsule is present. It is usually a year before cases treated by apparatus can lay aside their apparatus and not infrequently it is six months after the injury before the limb can be used. Even after the lapse of a year the condition of the limb is unsatisfactory. There is always a tendency of the fibrous tissue to stretch and this causes weakness in the extension of the limb and inability to walk upstairs except one step at a time, in fact inability to walk anywhere with any degree of comfort except on level ground. Adhesions in the joint are apt to persist and cause pain and disability. The condition of such patients may be improved by a secondary suture of the patella but the final result in such secondary operations is not nearly so good as that following primary suture.

From a consideration of the final results as well as of the pathological conditions present we can arrive at no conclusion other than the advisability of operative interference.

Having arrived at this conclusion, our next object is to determine at what time such interference is best undertaken. The period which shall elapse between the receipt of the injury and the operation depends to a great extent upon the amount of coincident traumatism and synovitis. Should there be but slight injury to the surrounding structures and their vitality be comparatively unimpaired immediate operative interference may be instituted. If, however, the traumatism and synovitis be marked it is best to allow a few days to elapse in order that the tissues may be in a condition to combat more effectually the additional traumatism of an operative endeavor accompanied as this is by the probability of the entrance into the wound of a certain number of bacteria. This period varies from five to fourteen days.

This period, which may be termed the period

of initial treatment, has for its object the rendering impossible of further separation of the fragments by spasmodic contractions of the quadriceps, the controlling of the effusion with the same object in view, the promotion of the rapid absorption of inflammatory products and the preparation of the skin for operation. These various objects are obtained by elevation, fixation, compression, evaporating lotions and the ice-bag. The leg, knee and thigh are shaved and cleansed. The limb is placed upon a Volkmann splint, to which the foot and leg first is bandaged and then the thigh. The bandage securing the thigh should be broad and should exert sufficient pressure to control the spasmodic contractions of the quadriceps extensor. The effusion into the joint is controlled by a pressure bandage frequently readjusted. This is supplemented by an evaporating lotion of alcohol and water and by the ice-bag. If there is severe pain local applications of lead and opium wash may be employed or Majendie's solution administered hypodermatically. Any attempt at first to approximate the fragments will meet with failure on account of the presence of the effusion. The dressings should be so arranged as to allow of daily inspection of the knee without disturbing the relation of the parts. As soon as the effusion and the inflammatory reaction is seen to be subsiding the case is prepared for operation.

In cases in which the distention of the joint is extreme or in which there does not appear to be any attempt on the part of nature to cause an absorption of the fluid, the joint may be aspirated. It is impossible to withdraw all of the fluid as the needle becomes readily blocked with blood clot. The removal of even a small portion will, by lessening the tension, promote the absorption of the remainder. The blood clots lie for the most part at the back of the joint and beneath the lateral aponeurotic attachments. In order to avoid them and withdraw as much of the fluid as possible it is advisable to enter the joint at the inner and lower border of the patella with the needle directed upward and backward, its point finally lying in the joint just behind what would normally be the center of the patella. The technic of aspiration must be carried out with the same rigid attention to asepsis as is employed in exploratory and remedial puncture elsewhere.

Technic of the Operation.—The most rigorous asepsis is insisted upon. I make it a rule that no hand, however well disinfected, shall touch the wound, nor any part of an instrument coming in contact with the wound. Except through the air, the skin of the patient, and the suture material there is no medium by which infection can enter the wound. To guard against carrying infection from the skin, two knives are used, one for the skin and the other for the deeper dissection. Two sets of retractors are used: one for the skin the other sharp-hooked, to steady the fragments. Stick-sponges are used so that there

is no need for the sponges to come in contact with the hands. For the skin incision I employ either Hahn's, Mackenzie's, or, more recently, an incision suggested by Dr. George R. Fowler. This incision is smaller than either of the others, yet it can be retracted sufficiently to allow direct inspection of the joint cavity and gives sufficient room for the application of the sutures. The incision is three to four inches in length, full curved to conform to the normal border of the patella, and placed to the inner side of that bone. This incision is made with the first knife, the edge of the flap is picked up with anatomical forceps and the flap reflected with the second knife so as to expose the torn capsule and the upper and lower fragments. The raw surface of the flap is covered with a gauze hand sponge. The flap is retracted to allow of a full view of the parts. The fringe of torn periosteum and capsule is picked up with anatomical forceps at one extremity of the rent and with a knife is shaved away from the fractured surface of the upper fragment. The fractured surface of the lower fragment is cleared and both surfaces freshened with a sharp curette. All blood clots and torn ends of tissues are removed with anatomical forceps. To irrigate the joint or to remove the clot with stick sponges only inflicts needless traumatism on the synovial lining and predisposes to adhesions. The upper fragment is held fixed by sharp retractors in the hands of an assistant and is pierced by the drill to either side of the median line. The drill enters the anterior surface of the bone one-half inch from the fractured surface and emerges on the fractured surface one-eighth of an inch from its posterior edge, thus insuring accurate approximation. Four holes are drilled, two in each fragment. Each time before withdrawing the drill each end of a strand of silkworm gut is passed through an opening in the end of the drill. This forms a carrier which facilitates the passage of the bone sutures. Medium-sized chromicized kangaroo tendon is used. The drill is withdrawn and disengaged leaving the tendon in place. Care is taken that the drill holes in the lower fragment correspond exactly to those in the upper fragment. Two other tendon sutures are introduced one to either side of the patella close to the bone. The fragments are now steadied and held in apposition with hooked retractors and the sutures tied, the lateral sutures first, then the bone sutures. As a further precaution the rent in the capsule is closed by a continuous suture of fine kangaroo tendon. A subcuticular suture of silk closes the skin wound. A light dressing is applied and the limb secured to a Volkmann splint.

The after treatment and final results are briefly described in the following cases:

Case I.—F. B., aged thirty-nine years, male; occupation, driver. Injury received July 25, 1898. Result of muscular action. The fracture was simple, transverse, with $1\frac{1}{2}$ -inch separation. There was immediate disability. Synovitis and

ecchymosis were not marked. The parts were supported by a compress and bandage and two days later operation was performed. Ether anesthesia lasting 33 minutes during which time eight ounces of ether were used. Hahn's incision. The capsule was found completely ruptured. There was but a small amount of blood and synovia in the joint, few clots. There was no tilting of the fragments. The line of fracture was in the middle transverse line, with the torn capsule overlapping the fractured surfaces. The usual toilet of the joint was done and the fractured surfaces held in apposition with a circumferential suture of kangaroo tendon supplemented by a suture of the capsule with the same material. The skin was closed with a silk subcuticular suture. Plain gauze dressing; Volkmann splint. On the tenth day all dressings were removed, the subcuticular suture removed, and a supporting bandage applied. Massage and passive movements were instituted. On the fourteenth day the patient was out of bed and began active movements of the knee. On the eighteenth day he walked unaided. The functional result was perfect at the end of the third week.

Case II.—W. S., aged thirty-three years, male; $3\frac{1}{2}$ years before present injury fractured right patella by muscular action. Treated in St. Vincent's Hospital. Strapping and plaster of Paris. Eight months later refractured patella and was operated upon at Bellevue. Bad functional result from adhesions. On Dec. 19, sustained a third fracture by muscular action. Simple transverse fracture with one-half inch separation of the fragments. Synovitis and ecchymosis, slight disability. Treated by preliminary compression bandage and Volkmann splint. Operation 15 days after receipt of injury. Hahn's incision. Fragments found widely separated. Capsule completely ruptured. Fracture in lower transverse line with torn capsule interposed. The usual toilet of the joint was performed, torn capsule trimmed and dense fibrous tissue from edges of fracture cut away. Two broken sutures of silver wire from the previous operation were removed. Holes drilled in fragments and approximation secured by heavy sutures of chromic gut. Incision in tendon of quadriceps to relieve tension. Capsule sutured with chromic gut. Subcuticular for skin incision, plain gauze dressing, fenestrated plaster cast. Subcuticular removed on the tenth day. Cast kept on for 60 days; discharged the seventy-third day after the operation with some, though not solid, union and with slight lateral mobility of patella.

Case III.—P. H., aged sixty years, male; occupation, roofer. Jan. 1, 1900, right patella was fractured by falling on a flat surface. The fracture was simple transverse, with $2\frac{1}{2}$ inches separation. Ecchymosis and synovitis were not marked. There was immediate disability. Initial treatment consisted in the application of a Volkmann splint, strapping the joint and the use of an ice-bag. Operation eight days after receipt of

injury. Ether anesthesia, 16 ounces being used, and taking 50 minutes. Hahn's incision. There was complete rupture of the capsule, with slight amount of synovial fluid and blood clots. The fracture was in the middle transverse line with the upper fragment tilted forward, its fractured surface being covered with the torn capsule. The usual toilet of the joint. A kangaroo mattress suture of the quadriceps and ligamentum patellæ was applied in front of the patella. This served to overcome the tilting and gave perfect apposition of the fragments. This was supplemented by a suture of the capsule with formic catgut. The skin was sutured with a subcuticular of formic catgut. There was a slight rise of temperature on the fifth day. Inspection of the wound failed to reveal any infection. During the third week a light cast was applied with a fenestrum over the patella and the patient allowed to walk aided by a chair and a stick. Lateral massage of the patella was done daily. During the fourth week the cast was removed and active movements begun. On the thirtieth day the patient began light work. He never used crutches. Four months after the operation the functional result was perfect. There remained no evidence of fracture. Examination two years after the operation reveals a heretofore unnoticed increase in the size of the right leg. The patient informs me that this has always been so and is the result of the position which he assumes in following his occupation as roofer.

Case IV.—A. W., aged thirty-eight years, male; occupation, steamfitter. Coincident disease, articular rheumatism, chronic alcoholism. Left patella was fractured Feb. 9, 1901, by a fall on a flat surface. Simple, transverse fracture with $1\frac{1}{2}$ -inch separation. Ecchymosis and synovitis not marked. Immediate disability. Initial treatment, ice-bag, compression bandage, and Volkman splint. Operation, ten days after receipt of injury. Anesthesia, chloroform one ounce, ether eighteen ounces. Duration of anesthetic fifty minutes. Hahn's incision. Complete rupture of capsule, small amount of blood clot and synovial fluid; no tilting. Fracture in middle transverse line with torn capsule interposed. Usual toilet of joint. Interrupted suture of kangaroo tendon for capsule. Linen thread subcuticular suture. Volkman splint. Subcuticular and all dressing removed and massage and passive movements begun on the tenth day. Active movements on the fourteenth day. Patient walked unaided on the sixteenth day. Two weeks later functional result was practically perfect.

Case V.—J. H., aged thirty-seven years, male; occupation, fireman. Patient very stout and pronouncedly alcoholic. Right patella fractured Sept. 10, 1901, by blow from nozzle of hose. Simple transverse fracture with $2\frac{1}{2}$ inches separation. Immediate disability. Marked ecchymosis and synovitis. Initial treatment ice-bag, bandage, Volkman splint. Operation, fourteen days following injury. Anesthesia, chloroform one

ounce, ether 20 ounces, morphine sulphate one-quarter grain. Duration of anesthetic one hour and eighteen minutes. Mackenzie's incision. Complete rupture of capsule, much synovia and blood clot, and both fragments tilted forward. Fracture in middle transverse line with torn capsule interposed. Usual joint toilet. Fragments drilled and two sutures of kangaroo tendon introduced. Capsule sutured with kangaroo tendon. There was considerable difficulty in maintaining the fragment in apposition. Silk subcuticular for skin. On account of the alcoholic history, a plaster cast was applied. This was removed on the sixteenth day and the subcuticular suture removed. Passive movements were then begun but did not meet with much success. On the twentieth day the patient was compelled to get out of bed but refused to indulge in active movements except to a very slight extent. Patient persistently refused to move the joint with the result that at the end of three months there was but slight motion. This has since improved greatly.

Case VI.—G. F., aged fifty-eight years, male; occupation, collector. Right patella fractured nine years ago. Sustained present injury Nov. 4, 1901. Fracture of left patella. Result of muscular action. Simple transverse with $2\frac{1}{2}$ -inch separation. There was immediate disability. Slight synovitis and ecchymosis. The leg was treated by an ice-bag to knee and rest in bed for twelve days. Internal curved incision. There was complete rupture of the capsule, a small amount of blood clot and synovia in the joint. Both fragments tilted forward. The fracture was in the middle transverse line, the upper fragment slightly larger. The edges of torn capsule were interposed between the fragments. The usual toilet of the joint was performed and the edges of torn capsule trimmed away. The fragments were approximated by through-and-through suture of the capsule with kangaroo tendon. The skin was closed with a subcuticular. A plain gauze dressing applied. Bony union was secured and the case was discharged on the sixty-third day, with almost normal movement.

Case VII.—K. M., aged forty-two years, seamstress. Injury received Nov. 16, 1901. Result of a fall upon a flat surface. Fracture of right patella. Simple transverse with two inches of separation. There was immediate disability. Synovitis and ecchymosis were slight. The parts were supported by a Volkman splint, with compression bandage and ice-bag for ten days when operation was performed. Curved internal incision. Rupture of capsule complete. A considerable amount of blood clot and synovia was found in the joint. There was tilting of the fragments. The fracture was in the middle transverse line the size of the fragments being equal. The torn capsule was interposed between the fragments. The capsule was sutured with through-and-through suture of kangaroo tendon. Skin sutured with silk subcuticular. A plain

gauze dressing was applied and the limb was placed in a plaster cast. The first dressing was done on the fourteenth day. The cast was kept on until the third week when a lighter one fenestrated was applied and the patient allowed to get out of bed. This cast was removed on the twenty-eighth day and active movement begun. Patient allowed to walk with crutches. On the fortieth day the patient walked unaided. Bony union was obtained. The patient resumed her occupation on the fortieth day and a perfect functional result was obtained the ninety-sixth day.

Case VIII.—J. S. B., aged thirty-five years, male; stableman. Injury received Dec. 7, 1901. Fell against a curbstone. Fracture of left patella. Simple transverse with an inch of separation. Synovitis and ecchymosis were marked. Disability was immediate. The limb was put in a compression bandage and placed upon a Volkman splint with an ice-bag applied to the joint. On the tenth day operation was performed. Curved internal incision. The joint was found full of synovia and blood clot and there was complete rupture of the capsule. Both fragments were tilted forward. The fracture was in the middle transverseline and torn capsule was interposed between the fragments. The capsule edges were trimmed, the usual toilet of the joint performed and the capsule sutured with interrupted kangaroo tendon. A plain gauze dressing and a plaster cast were applied. The first dressing was done on the twenty-first day when the cast was removed and active movements allowed. Patient walked unaided on the twenty-fourth day. Crutches were not used. Moderate lymphedema necessitated the application of a supporting bandage. The result was good bony union. The patient was allowed to resume his occupation on the forty-fifth day and a good functional result was obtained by the fiftieth. Slight lymphedema persisted.

Case IX.—B. M., male; general helper. Injury sustained Feb. 11, 1902. Direct violence; falling against a curbstone. Simple transverse fracture with two-inch separation of the fragments. Synovitis and ecchymosis were marked and disability was immediate. The leg was placed in a Volkman splint with a compression bandage and ice-bag for 14 days when operation was performed. Curved internal incision. Complete rupture of the capsule. The blood clot and synovia were removed from the joint cavity and the torn edges of capsule interposed between fragments trimmed away. The fracture was in the lower transverse line and the upper fragment was twice the size of the lower. The prepatellar bursa was involved. The edges of the torn capsule were united by interrupted sutures of kangaroo tendon and a silk subcuticular used to close the wound. A plain gauze dressing was applied and the limb placed upon a Volkman splint. The dressings were removed on the twentieth day. Bony union. Functional result perfect at the end of the sixth week.

SOME PHYSIOLOGICAL OBSERVATIONS ON A CRUSTACEAN HEART.

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OF BOSTON.

(Concluded from Page 550.)

V.

Various and numerous mortal mutilations and divisions of *Daphnia* with a sharp and delicate scalpel were made to determine, if possible, the relations of the heart to the remainder of the organism, and especially the degree of the heart's independence and autonomy. These painless operations were performed sometimes by aid of a triple hand-lens and sometimes with the naked eye, the large number of experiments being trusted to bring about, in part, by chance, as it were, that which, because of the extreme smallness of the animal, was often impossible deliberately. When the section had been made the compound microscope helped to determine exactly the location of the incision and, as near as might be, its effects, especially on the heart. Yet even with a body rarely over a millimeter long it is not difficult to make, even with the naked eye, many desired sections. The shell of this animal is soft enough to allow of clean cutting in any place or direction if the blade be keen, and serves, moreover, to keep entire the parts produced. All these mutilations and divisions, it will be readily seen, involve at least three pathological conditions, each of which may have strong influence, conceivably, on the heart, namely, shock, the severing of nerves, and the cessation of the circulation. The first, we have already given evidence to believe, would tend to inhibit the heart, while the last, by depriving the organ of the normal stream of its nutriment and of most of the resistance against which it normally works, would tend still further to derange its action late or soon. So small is *Daphnia* that to discriminate these modifying conditions of any experiment is impracticable, for any sectioning or other form of mutilation other than mere puncture stops the circulation by opening its conduits, while the nerves that any particular section may disturb it is, in our present knowledge of Cladoceran neurology, quite impossible to say. The results derived from these particular experiments are therefore gross effects, yet quite adequate for the intended purpose.

The result of the removal with the knife of enough of the head so that all of the central nervous system anterior to the esophagus was removed, in one experiment was to slow the heart for three or four minutes about 40 per cent., after which period very nearly the normal pulse-rate was resumed. Such a section stopped all blood circulation proper, although the blood was to be seen (by means of its large corpuscles) passing gently in and out of the heart in a random sort of way. In another experiment in which the head was severed about the same showing in the pulse-rate resulted, but the latter did not get back to normal, and in five minutes the heart

stopped for good, within the time limits of the test at least, although the respiratory feet began active movements as the heart's ceased. In all the mutilations of this sort the heart changed in shape somewhat, in its systolic or contracted shape especially, the viscus being obviously always in some degree of collapse, the heart becoming flatter in its systole, due possibly to a tetanic shortening of its separate muscular segments.

Transverse, that is dorsoventral division of the body into three parts, an anterior, middle and posterior part, naturally caused a more serious effect on the heart's action. (1) In one case, e.g., in which the anterior portion included the brain and the posterior about one-quarter of the body, the heart beat weakly and fast about two minutes and stopped. (2) When the animal was divided once, and that just anterior to the heart, the latter was not beating two minutes after. (3) A similar section left the heart beating weakly and fast for a minute, but this soon gradually ceased. (4) In another case where the body was divided into three portions almost equal in length the heart stopped at once, resumed its movements in the shape of a slight rolling three minutes later, began to beat coordinately five minutes later at a rate of 140, became slower very shortly, and in two minutes more had stopped permanently. (5) Removal of abdomen by a section one-quarter the body length from the caudal end stopped heart permanently without more ado. (6) Division of the animal transversely in the middle line, so that heart was in the anterior half, caused immediate stopping of the heart, but fibrillary movements began in two minutes, precursors of a more or less normal beat.

Many experiments were made to determine the consequences arising in the heart from a mere opening of the blood channels, thus causing the pressure to markedly fall and in nearly every case entirely suspending the circulation so far as the corpuscles floating in it could determine. Its effects one learns from these, sample experiments.

(1) Section of the blood sinus dorsal to the brood sac caused the heart to work more slowly and with marked spasmodic or jerky movements. (2) An incision into the circulation in the extreme caudal end of shell proper had no marked visible effect on the heart save to reduce somewhat its average size as it beat. (3) Section oblique and deep just posterior to the heart caused a slowing of the latter and made it smaller in systole. (4) A deep incision into the dorsal and posterior part of the animal lessened markedly both the force and the rate of the heart; the incision was then closed up, apparently so as to be quite obliterated, and the heart at once beat much more rapidly. (5) An incision into the circulation was made, causing the heart to stop at once; in a few seconds it started up jerkily, soon regained its normal rate, which lasted for nearly two minutes, then stopped for two minutes, after which, suddenly, with three slow beats, each quicker than the preceding, it began beating

rapidly, somewhat spasmodically, but progressively less so; no circulation was visible at any time. (6) The "abdomen" was cut open rather deeply at the place where the posterior ganglion seems to be in the bend of the gut. The heart stopped, but began in three minutes the marked, wave-like movements, which in another minute changed to a somewhat irregular beat—with the viscus in two parts functionally, the dividing line being at the lateral opening, and the posterior or auricular part being rounded and sacular, while the anterior part was much more flat.

These simple enough experiments suggest to some extent, at least, the dependence of the *Daphnian* heart on the nutritive materials of its blood, for serious derangements immediately follow the cessation of the circulation, thus reducing the supply of nutrient normally supplied, both to the outside and to the inside of the viscus. But the removal of the nourishing plasma from the heart's protoplasm was never in these experiments approximately complete, the strength of the stream, merely, was stopped, as the stasis of the corpuscles proved. Plasma, doubtless, still bathed the heart outside and regurgitated in and out through the cardiac openings. These tests show, notwithstanding, that the rhythmical automaticity of this heart depends upon its immediate food supply, the organ becoming slow and irregular in its movements and stopping, probably, when the nutriment of the immediately surrounding plasma is consumed. Experiment 4 of the last series above is especially conclusive on this point, for it practically demonstrates that the irregularity and slowness following incision merely into the circulation are dependent on the consequent lessening or stopping of the blood stream, either mechanically or anabolically or both, the incision made into the blood sinuses in that experiment having been completely closed again after its effects had been observed, with the result that normal heart action was immediately resumed. The same result has been demonstrated by Porter on the mammalian heart under much more artificial conditions, but this confirmation comes from a heart far removed in its simplicity even from the heart of the frog so responsive to Ringer's solution. From the circulatory improvement following the infusion of salines in surgery it cannot be doubted that hydraulic principles have some share in the explanation of the facts.

VI.

The reactions of the heart of *Daphnia* to galvanic and to induced electricity suggest one or two interesting things, but leave these things unexplained. The apparatus employed in this series of experiments, as in the others, was appropriately simple, the animals being too small to allow of the application of special instruments, which possibly might explain results in more definite terms. The apparatus consisted of dry cells, the ordinary laboratory students' inductorium, Pohl commutator, simple key, and part

of the time the Morse key, seconds circuit-breaker, and kymograph already described as used in the exact study of the pulse-rate. The electrodes of this electrical circuit were adjusted to the microscope stage so that they included the drop of water on the slide which contained the animal. No attempt was made to stimulate the animal directly, that is, without the intervention of water, since to remove it would be to put the animal into an unwarrantably abnormal condition. Moreover, the structure of the animal, so largely saline fluids, makes it probable that its body is at least a moderately good electrolyte. To various specimens, then, lying in a flat drop of water under the objective, various currents of electricity were successively applied. We record a few typical experiments:

(1) A constant galvanic current of a strength of about three volts caused no obvious effect on the heart within the limits of the experiment, nor did any weaker strength. Nothing different from normal was to be seen in the heart, either at make or at break. That the pulse-rate was not changed was proven by making on the kymograph-drum a series of records of the heart rhythm by the indirect method already described; each record was ten seconds long and at intervals of one minute from each other, the whole lasting fifteen minutes, during which time three volts passed continually through the animal. No change whatever in the pulse-rate was discoverable on measuring with the compasses and averaging these fifteen records. The direction of the current through the body likewise showed no difference. (This current at make, and especially at break, caused spasmodic contractions of the feet and a disturbance of the normal oscillation of the eye.) (2) The only obvious effect on the heart of a current of a tension of 4.3 volts was sometimes to stop it momentarily on the make. Continued, this current gradually deranged the normality of action of the heart and caused it to undergo a small degree of the collapse characteristic of the viscous under excessive stimulation of any sort. Aside from this effect even this considerable degree of electricity caused no change in pulse-rate or other function. It caused, however, violent spasms of the antennæ, in addition to the effects of a weaker current. (3) In another individual this strength of 4.3 volts stopped the heart and held it in diastole as long (within limits) as the current passed. When the head was toward cathode, i.e., when the electricity passed perhaps from "auricle" to "ventricle," the effect seemed to be more marked than when it was in the contrary direction. On breaking the circuit after a sustained diastole the heart beat exaggeratedly several times, as if in compensation. (4) This same current running in either direction through the body caused the heart to dilate actively and to stop nine seconds, then allowing it to go at a normal rate but with a diastole greater than normal spatially. When this current was broken the pulse-rate became somewhat slower than during the passage of the

current. After this varied stimulation, lasting a few minutes, the heart stopped again; an antero-posterior descending current of the same strength then produced a distinct dilatation of the ventricular end of the heart, while an ascending direction was followed by an active dilatation of the whole heart, otherwise still. (5) A current of 7.8 volts intensity caused the heart to stop in extreme diastole for about a second, it then beating on in a much exaggerated way, both systole and diastole being increased, but more slowly than normally. When the current was broken the viscous stopped short in moderate systole, and had the appearance of a degree of protoplasmic collapse, even from one shock. (6) In another specimen, making of this same strong current caused a momentary dilatation, followed by action normal save that it was slow. When the circuit was broken signs of collapse of heart were prominent, but not more so than in the other protoplasmic mechanisms of the body. This strength of current, especially at break and make is rapidly destructive of the life of this animal, and that beyond repair.

In these experiments with relatively high tension galvanism the absence of effects on the hearts of embryos, usually conspicuous within the maternal brood-sacs was very marked. Even 7.8 volts had no visible effect on these embryo hearts until after several minutes of their stimulation. It seemed that the pulse-rate of the embryo hearts sometimes was increased and not decreased, as in the adult heart. Regularly in these experiments the hearts of the embryos continued to beat long after the parent organ was practically, if not literally, dead. One is tempted almost to suggest an explanation of this phenomenon as the absence of nerves from the embryo heart, which, in the adult, collect the destructive electric waves and conduct them harmfully to the heart; in the embryo perhaps there is nothing but itself, composed of muscle cells, to be deranged, and that less readily than a neural mechanism would be.

The one conspicuous fact then in relation to the effects of galvanism on *Daphnia's* heart is that the latter is exceedingly resistant. To currents which may be termed weak or moderate for a small animal, the heart shows no reaction whatever within the period of truly physiological influence. To currents somewhat stronger there is a momentary halt in diastole, and often signs of an active diastole or at least of an active dilatation. The compensatory extreme action after a pause artificially produced by a galvanism of sufficient strength is oftentimes conspicuous. With still stronger currents the actual protoplasm of the body is deranged, and in this the heart naturally has a part; the break is a more powerful disorganizer than is the make of the current. Thus we see that while a strong current may destroy the functional character of the heart as a coordinated complex contracting organ, working rhythmically, it may not be capable of altering this automatic working save in this indirect and pathological way.

Induction-currents act on the heart, as always,

much more strongly than does galvanism. Using a primary current of one volt strength, the induced current from the common small students' inductorium has no apparent effect on this heart until the secondary coil is within 2 cm. of the place of maximum strength. No change in the rate, as shown on the kymograph drum, is to be made out. None of the dilating effects which the constant current produces are to be seen; nothing of the compensatory overactivity, nor does the induced electricity seem even to stimulate to normal activity the heart stopped by any agency. The experiments with the alternating induction-currents gave results, negative or positive, so uniform that the citation of sample cases is in this case needless: namely, below a fairly constant strength no result, above that point that collapse with the pseudo-fibrillary wave-like movements we have noted so frequently. Maximal alternating shocks promptly kill the heart and the other organs of the animal, the cardiac collapse reaching in this case a degree which reminds the observer of the effects which complete mechanical crushing would produce. With lesser degrees of the current, sometimes the brain seemed to be disorganized first, in which case the heart may slow somewhat and later recover its normality as in other cases of cerebrally originated inhibition.

Single make and break shocks of induced electricity have an effect less than the automatically made and broken currents in proportion to their relative infrequency. Thus single maximal make shocks caused tetanus of the ocular muscles, but usually no obvious effects on the heart. Single break shocks act more powerfully, oftentimes instantly stopping the heart for a few seconds, after which the normal rate was resumed. Weaker single shocks showed proportionately less effect.

The direction of the induction current seemed to make no difference. Embryonic hearts in the brood sac are affected much more easily by induced than by direct electricity, but yet are more resistant than is the adult heart.

In general, then, induction currents may be said not to influence *Daphnia's* heart appreciably unless they be of destructive intensity and frequency.

VII.

Diluted beef serum was added in many cases to the animals when their hearts had stopped from one or another of the causes already described. The results of this procedure were not in any case surprising in any respect. Recoveries and instances of increased normality of function occurred often enough to warrant the assertion that even beef serum, different as it probably is from the blood plasma of *Daphnia*, has a distinctly beneficial, that is, anabolic effect on the animal's heart. The recoveries in some cases took place more promptly than they would have done without the nutritive and perhaps stimulating solution; in other cases it cannot be doubted that the lives of the animals were in many cases

restored, which without it would have been lost. The effect was never immediate, for a few minutes seemed to be required to allow of the absorption of the serum into the circulation from the surrounding water.

Sometimes there was excellent evidence that the cells or segments of the heart were acted on individually by the salts of the serum, for there was caused in some cases a contraction of the separate cells when the coordination which alone could make of their individual contraction a heart-beat was entirely lacking. The influence in quickly restoring a normal pulse-rate was particularly striking, for whenever the heart started up through the action of the serum added, the rate became either very soon or, more often, at once practically normal. Sometimes the heart was so collapsed, as for example, by the alternating induction-current, that it could never beat to its full capacity probably, yet the restorative influence of the serum would cause the setting up of the normal rate of movements in the shapeless mass of cardiac muscle cells lying on the floor or ventral side of the cardiac sinus. On the normally active heart no accelerating effect could be observed from this agent, but on the disabled organ the serum had an undoubtedly vitalizing influence.

VIII.

The observations which were made regarding the effects of certain typical drugs on the heart of *Daphnia* were carried on distinctly not as a study of the drugs' respective actions, but in search of knowledge regarding the heart under various stimuli, as in the experiments reported in previous sections. It appeared, however, in these tests, quite inadequate as pharmacological experiments, that such simple and transparent animals as is *Daphnia* might be used with very great advantage probably in studies of the various drugs in so far as one seeks their effects on protoplasm; one sees all the organs at once and all appreciable effects produced could be accurately gauged and recorded. One would learn in many cases relatively little or even possibly nothing from such possible researches as to the action of any drug on a mammal, and that chiefly because in *Daphnia* the nerves are unknown and probably relatively few in number and simple in their connections, thus making the probable main effect of any drug to take place directly on the heart; in the mammal, on the other hand, the influence of most drugs affect the heart largely through the nervous system. Still, as has been said, organisms like *Daphnia* seem an excellent place to study the effects of many drugs on protoplasm by direct application.

In these experiments the drugs were used strong so that their stimulating results, whatever their nature, might be the more emphatically discovered; were one studying the drugs and not as here, the heart, their strength would have been at least in part very much lessened, for only

so could their ultimate nature have been determined.

Alcohol.—(1) One per cent. ethyl alcohol makes the animal jump around, but seems not to affect appreciably the heart within the time limit of the experiment. (2) In case of a small individual, a 2-per-cent. solution of alcohol seemed to have at first an accelerating influence on the heart, which disappeared in about four minutes, and was followed by violent convulsions of the whole body; 4-per-cent. alcohol added then in place of the weaker solution caused in one minute the beginnings of a cardiac paralysis; five minutes later the organ was still save for the possible flapping of the valves; five minutes later there began slight clonic spasms or tremblings of the body generally which seemed to start up (?) slow, weak and slight pulsations of the heart. Distilled water was now poured over the specimen and within half a minute the normal pulse-rate had gradually returned. (3) In another individual, 4-per-cent. alcohol caused quickly a slowing of the heart almost to stasis, it then becoming irregular in its beat, with a sort of rhythm in which it missed one beat out of four or five. (4) Four-per-cent. alcohol seemed not to affect this specimen as soon as some, but in five minutes the heart stopped more suddenly than usual; in two seconds it started up again, and in three or four minutes it had become regular and abnormal only because a little slower than usual. (5) A solution of alcohol of about 5-per-cent. strength caused heart to slow up and stop within five seconds from time of its application, the stasis being in diastole. Stronger alcohol causes quick death of whole body by withdrawal of water from the protoplasm.

Nicotine.—A 2-per-cent. aqueous solution of nicotine caused immediately clonic spasm of the skeletal muscles, especially rapid in the embryos, but no great effect on the heart. After eight minutes the pulse-rate was about 168; after twelve minutes the rate was 120 and both systole and the diastole obviously weak; at the fourteenth minute the heart stopped in moderate diastole, its rhythm having been so irregular recently as scarcely to be imitated with the recording key. Water was then added without reviving the heart; 10-per-cent. alcohol caused heart to start, and in fifteen minutes it was beating about a hundred times a minute.

Chloral Hydrate.—(1) A 1-per-cent. aqueous solution of chloral hydrate in the course of ten minutes had slowed the heart a few per cent. On adding a 2-per-cent. solution the slowing became much more marked with an exaggerated diastole, apparently an active movement. (2) On another individual, a 1-per-cent. solution produced little effect in five minutes; a 2-per-cent. solution slowed it more distinctly within five minutes more; a 3-per-cent. solution brought the heart to a stand in four and a half minutes, but the heart resumed action immediately almost, and the rate gradually increased up to 150 with an exaggerated diastole and a systole less complete

than normal; five minutes later the rate was 180; five minutes later the extreme diastole was gone and the whole heart was beating more flatly than normal at a rate of 155. Other similar experiments showed that chloral hydrate markedly slows the heart, both in rate per minute and in speed of movements, increasing the diastole for a time, and makes its action much more spasmodic than is normal; after a while both of these inhibitory effects wear off leaving heart somewhat weak. The appearance of slow, active and powerful diastole is the chief characteristic of the visible action of this drug on the heart we are studying. Chloretone acts apparently as does chloral hydrate.

Aconite.—A 3-per-cent. aqueous solution of the official tincture of aconite added to this animal resulted in an immediate slowing and paralysis of the heart without any special organic or functional features being notable. The heart simply stopped with this strength of the poison.

Chloroform.—Shook up 0.1 c.c. chloroform in 10 c.c. water and added the solution to a *Daphnia*. The bodily organs all almost immediately stopped while the protoplasm darkened generally. The heart continued its beat for some time, at first slowing, then becoming irregular in an extreme degree. There were markedly spasmodic contractions in dystole alternating irregularly with exaggerated diastole for five minutes or more.

Curare.—(1) A 2-per-cent. aqueous solution of curare slowed the heart in a few minutes. The circulation was then opened by a small, harmless incision, and the heart stopped very quickly in a state of collapse. (2) The blood sinus near the spine being opened, the heart beat spasmodically and more slowly than usual. Curare was added and heart stopped at once. (3) Same. (4) Curare seemed to have no constant effect on the skeletal muscles unless circulation was opened.

Digitalis.—A 3-per-cent. aqueous solution of the official tincture of digitalis slowed and invigorated the heart, and made it irregular.

In all of these drug poisonings of the heart the general appearance of the heart is different from what it is when the injury is electrical or mechanical, though indirect. The dead state of the heart after poisoning is that of about half diastole, while in traumatic death the size of the heart may be no more than a third, a quarter or even less, of the normal average volume of the viscus.

Several individual *Daphnia* were caught which seemed to be suffering from an extraordinary degree of leucocythemia. The corpuscles filled almost completely in some parts the blood sinuses and were of double or more the size of the ordinary blood corpuscles. The heart's action showed no abnormality and the circulation and all the other general functions seemed to go on regularly.

IX. SUMMARY.

There is strong physiological evidence that the heart of *Daphnia* has nerves connected with

it, the stimulation of which inhibits its action, and evidence of a similar sort, although negative, that the heart has no augmentor nerves.

This heart appears to be an eminently automatic organ and one very independent, especially in its rate of beating, of agencies usually modifying or even destructive.

Puncture of many parts of the brain and body, especially just ventral to the heart and in a supposed caudal ganglion, inhibits the heart for a few minutes only, but in other portions or spots of the brain and body mechanical stimulation produces no apparent effect.

The break and make of galvanic currents tend to inhibit the heart in diastole, and during the passage of the current the diastole is apt to be exaggerated. Induced electricity, unless of an intensity and frequency which disorganizes the protoplasm, has no effect on the heart beyond, sometimes, a momentary inhibition.

Division of the animal into parts inhibits the heart for a time or permanently, according to the mode and places of section. Openings of the circulation's channels lessens both the force and the average size of the beating heart.

When a *Daphnia* dries up, the heart continues to beat after all the other organs are still.

Beef serum absorbed into the circulation has a distinctly invigorating influence on the heart, increasing the force of its beat and the pulse-rate, but not beyond the normal for that individual.

The drugs, alcohol, nicotine, chloral hydrate, aconite, chloroform, curare and digitalis, all have a powerfully poisonous effect on the heart, in general not unlike their respective effects on other hearts.

The embryonic pulse-rate is one-half, on the average, that of the adult animal, which latter may be said to be about 240 per minute. The cause of this needs explanation.

The often considerable advantages of using for many sorts of research small transparent animals such as is *Daphnia*, are perhaps not adequately appreciated by physiologists and researching medical men in general.

MEDICAL PROGRESS.

MEDICINE.

Perforating Typhoid Ulcer.—Not long ago a perforation in typhoid was looked upon as hopeless, but the prognosis has been somewhat improved by the earliest possible operative interference. F. J. SHEPHERD (Montreal Med. Jour., Jan., 1903) reports three cases of success from operation. His plan is to operate on the appearance of the first signs, not waiting for the unmistakable symptoms, such as rigidity, distention, vomiting, etc., for then it is too late. And it has been shown that patients have done well under operation when no perforation has been found. From operating so early, mistakes in diagnosis are inevitable, but such mistakes are counterbalanced by this apparent harmlessness, where a perforation does not exist, and by the increased chance of recovery when there is a perforation. The author always employs general anesthesia and wastes no time on the toilet of the peritoneum. It is

important, too, to recognize and treat other ulcerations that are likely to perforate. In one of the three cases the leucocytes remained subnormal.

Immunity in Syphilis.—Does there exist an individual, natural immunity to syphilis? The answer to this question cannot yet be given, according to VAN DÜRING (Berl. klin. Woch., Jan. 5, 1903). A more practical question, and one more readily answered, is whether or not immunity follows an acquired or inherited attack of syphilis. The belief was long current among practitioners that acquired syphilis imparted immunity to reinfection for a prolonged period. Cases were frequently cited in which reinfection had occurred, but unfortunately the evidence was never beyond criticism and the belief in acquired immunity remained. Furthermore, it has been assumed (the so-called law of Profeta expresses this view) that the descendants of syphilitics possess a certain degree of immunity. As a matter of fact, Profeta did not make the sweeping generalization which is nowadays ascribed to him, but merely said that a symptom-free child, born of a syphilitic mother, can be suckled by its own mother or by a syphilitic wet-nurse without becoming infected. Von Düring flatly contradicts the existence of an inherited immunity, as expressed in the law of Profeta, as commonly quoted. He observed epidemics of syphilis among school-children in villages in Asia Minor, notwithstanding the entire adult population of these villages bore signs of previous syphilitic attacks. In many instances fresh syphilis occurred in children whose parents were unquestionably syphilitic before the children were born. In children presenting saddle-noses and other marked signs of advanced syphilis (probably hereditary) there frequently was present fresh, newly acquired, contagious specific disease. Assuming that the first attack was acquired and not hereditary, these children at any rate suffered two separate attacks of syphilis; of their reinfection Von Düring has no doubt, and he therefore announces himself as unequivocally opposed to the hypothesis of immunity.

Vomiting with Acetonemia.—An attempt has recently been made by Marfan to class vomiting with acetonemia as a separate pathological entity. According to his description, such vomiting occurs in children between one and ten years, who are in apparently good health; but immediately upon the onset of vomiting, intolerance sometimes even for water, is absolute. The characteristic symptom is, however, the odor of acetone in the breath, which is comparable to the breath of patients who have taken chloroform; yet withal it is slightly acid. The same odor is perceptible in the urine when first voided; and acetone is demonstrable by the usual tests. The temperature is but slightly raised, but the persistent vomiting reduces the patient to a condition of exhaustion and depression resembling the condition seen in cholera. M. L. GUINON (Rev. Franç. Méd. et Chir., Jan. 12, 1903) reports a case in which these manifestations were present, though accompanied with obstinate constipation and periumbilical pain, followed by lax stools. The author's experience has been, contrary to that of Marfan, that constipation and digestive derangement are present in those in whom acetonemic vomiting occurs; and he leans to the belief that the acetone is simply an evidence of the intoxication which induces the vomiting, rather than that acetonemia is the direct cause of such vomiting. Acetonemic vomiting has frequently been noted by Guinon in arthritic patients.

Diagnosis of Leprosy.—The importance of bacteriological examination of the mucous secretion of the nose in the diagnosis of leprosy has been emphasized by Jeanselme; the bacillus of leprosy being fre-

quently found in this secretion from the onset of the disease. LEREDDE and PAUTIER (Rev. Franç. Méd. et Chir., Jan. 12, 1903) find that the search for the bacillus may often be facilitated by the induction of abundant nasal secretion through administration of potassium iodide (gm. 4) in one day. In several cases in which examination for the bacillus was negative, their presence was readily demonstrated in the increased mucous discharge which ensued the day after administration of potassium iodide.

Metallic Tin as a Vermifuge.—Metallic tin was formerly recommended for this purpose in the form of powder or filings, associated with mercury, but at the present time it is seldom used. According to the experience of I. I. DECHOOSKY (La Sem. Méd., Jan. 14, 1903), this metallic, precipitated by galvanism, is an excellent teniafuge. It slowly dissolves itself in the gastric juice, has no toxic action, contrary to the facts about the salts. In a series of experiments upon animals and upon himself, he is convinced of the entire innocence of the metal. In these experiments he began by employing 0.60 gram in powders, repeated five or six times, every fifteen minutes. Two hours later he gave three spoonfuls of the infusion of senna and two of castor oil. Prior to employing this medication the patient should be freely purged and kept for two or three days upon a diet which leaves little residuum in the intestines. Twenty-six out of 38 patients were cured at the first attempt; seven required repetition; and five received no benefit after repetition. The total dose, borne without difficulty, was 5 grams. Examination of the urine for the metal was negative; that of the feces was abundant, which indicates that the metal does not penetrate the system. Its teniafuge effect may be due to chemical action within the bowel, which affects the parasite, but not the patient.

Spontaneous Expulsion of a Large Vesical Calculus by a Child.—The rarity of spontaneous expulsion of large vesical calculi would alone make the case seen by VOYER (Gaz. Méd., Nantes, Jan. 17, 1903) noteworthy; but in the remarkable size of the calculus, passed by a girl of but seven years, it stands alone in the 35 cases of spontaneous expulsion of voluminous calculi collected from medical bibliography by Vignard, who reports the case for Voyer. The patient had for four years suffered with cystitis and incontinence of urine, and treatment had been limited to administration of antiseptics by mouth, owing to the intractability of the patient. The child suffered continually till upon one occasion intense pain in the vulvar region set in, and the calculus was passed. This was extremely hard, was 5 cm. long, $3\frac{1}{2}$ cm. wide, 9 cm. in its greatest circumference, and weighed 28 grams. The child's suffering was at an end from this time; though the expulsion of the calculus was followed by slight hematuria and purulent urine. Daily administration of borate and benzoate of soda overcame the abnormal condition of the urine within a period of two weeks, though urinary incontinence persisted. When seen four months later, this symptom also had subsided, and the patient was completely restored to health.

Splenic Souffle.—But rarely is the occurrence of the splenic souffle chronicized, therefore its presence lends a special interest to any case in which it is reported. Such a case came under the care of S. CERAULO (Gazz. Osped., Jan. 18, 1903), who describes the murmur as similar to the placental souffle in pitch and intensity; its quality being sometimes harsh and prolonged, again soft and of short duration. It is generally synchronous with the radial pulse, and is modified by position and respiration. In the present case, the spleen was much enlarged from malaria of long

standing. The numerous hypotheses concerning pathogenesis of the murmur are set forth by the author, but no definite conclusions are drawn as to the manner of its production.

Parasites of Smallpox and Chickenpox.—It will be very satisfactory to have the etiology of these disorders placed on an exact scientific basis. R. S. THOMSON and JOHN BROWNLEE (Brit. Med. Jour., Jan. 31, 1903) as a result of investigations carried on for a period of over five years, formulate these tentative conclusions: (1) There are present in the blood of patients having hemorrhagic smallpox small, spherical, highly refractive bodies. They resemble fat but do not stain with osmic acid. They are found in large numbers from the third or fourth day till death. In confluent smallpox, similar bodies appear on the third or fourth day and are found occasionally after the first week and abundantly in the early stages of both small- and chickenpox. (2) These bodies are found in cross sections taken from hemorrhagic areas. They also appear in the lymph spaces of the skin and in cavities of the smaller blood-vessels. These bodies are morphologically similar to the first mentioned, but differ slightly in their staining reaction. In smears from vesicles, the bodies are usually present and as the pocks grow older, these clear bodies increase in size until they occupy the greater part of the cell, while at a still later date, they are found apparently in a free state. They present no form of nucleus. It is interesting to note the absence of pyogenic micro-organisms both from the smears and skin sections. The authors make no deductions from their paper, which is a preliminary contribution, but state that appearances similar to those described as being present in smears of vesicles and pustules in variola occur also in varicella.

SURGERY.

Suprapubic Drainage in Tuberculosis of the Bladder.—Permanent suprapubic drainage for advanced tuberculosis of the bladder is the subject of a report of a case at the end of five years of this treatment by C. A. POWERS, in a paper read before the American Surgical Association, June 4, 1902. To sum up the case, the man was fifty-two years old; had suffered for some time from vesical tuberculosis; had a very small bladder, and almost constant urination. Treatment of the bladder made him worse. A permanent drainage above the pubes gave him relief and finally caused the ulceration to heal. Up to nearly five years after the operation he made progressive gain in health, strength and weight. At this time, the introduction of a badly fitting tube led to discomfort, leakage and possible relapse of the tuberculosis. The author believes that management of tuberculosis of the bladder in its early stages is hygienic involving good nutrition, bodily rest, change of climate, and proper management of the pulmonary tuberculosis which usually is present. Treatment of the bladder with instruments should be avoided, and it should never be defended. Incessant pain and urination in the bladder give the patient comfort and permit improvement in general nutrition and finally conduce to the arrest of the local tuberculosis. However great the discomfort of such a fistula may be, it is nothing when compared to the pain of tuberculosis of the bladder in its advanced stages.

Surgical Treatment of Pancreatic Cysts.—Cysts of the pancreas, while rarely encountered, are still the most common pathologic condition of this deep-seated organ that we are called upon to treat surgically, says A. MORGAN CARTLEDGE (Am. Gyn., Jan., 1903). Since Gussenbauer, in 1882, first operated successfully by incision and drainage for pancreatic cysts, there have been collected

by Körte and others about 121 cases. Most operators have followed Gussenbauer, that is, incised the cyst, stitched to the perietal peritoneum and drained. According to Böckel, the cases so treated number 115. This author also collected twenty-five cases where extirpation, either complete or partial, of the sac was practised, with four deaths. A comparison of these results, shown by the statistics, would seem to indicate that incision and drainage should be practised as a routine procedure in pancreatic cysts. It is a well-known fact that these accumulations, in and about the pancreas, do not pursue the same anatomical route in presenting toward the surface. This fact should have great weight in deciding for or against complete extirpation. Undoubtedly evolution most often takes place below the stomach and above the transverse colon, the cyst carrying before it the gastrocolic omentum. Cysts so presenting are best suited to extirpation, or, as the author prefers, enucleation. Probably the most frequent evolution of the cyst is above the stomach, or between the stomach and the liver. Such a cyst, if adherent at all, would present the gravest dangers in its enucleation. Can the manner or direction of the growth be ascertained with sufficient accuracy as to enable us to select a method procedure? Oftentimes the physical signs presented by the tumor will suggest this. The cyst which has evolved above the stomach is on a high plane and much more fixed than below. Cysts presenting below the stomach tend to displace the pancreas downward by traction and so induce a condition of otosis of this and surrounding organs. So great may this tendency be that acting in conjunction with deep inspiration on the part of the patient, the operator may carry the cyst almost to the pelvic brim. Finally the question may be settled by a sufficiently long incision in the abdominal wall as to permit of inspection. That extirpation is the best ideal operation, did safety permit, few would dispute who have had experience with incision and drainage. The latter is slow and disagreeable to a tantalizing extent, both for patient and surgeon.

Surgical Interference in Rheumatic Fevers.—While defending early surgical interference in rheumatic fevers, J. O'CONNOR (Lancet, Jan. 14, 1903) deprecates very strongly any attempt at the same unless the operator is convinced that he commands all essential elements to carry out an ordinary aseptic operation. It is obvious that under septic conditions this method may be followed by greater danger than is inherent in the disease itself. The dictum which he lays down is, Do not puncture, but open the joints in this disease, and drain them rather than cork them up. The matter of drainage is most important, in his opinion, in these cases, and to close such a joint would be foolish. He recommends an inch incision in the knee, for example, on each side of the joint, through the capsule. Through these openings a rubber drainage tube is passed, from side to side, one-half inch in diameter, and the joint irrigated daily with some convenient antiseptic. On the third or fourth day the tube is removed. The irrigation of the joint, however, is continued each day until healing of the wound no longer permits the passage of fluid. In opening the wrist and ankle, drainage is best carried on by means of gauze rather than rubber tubing.

Geographical Distribution of Stone and Calculous Disorders.—Although in this country there is not the same variation in the distribution of calculous diseases as in England, or the British Isles, more properly speaking (for the whole of Ireland is practically exempt), it is of interest from a purely etiological standpoint to note how great this variation is in other countries. REGINALD HARRISON (Brit. Med. Jour., Jan. 17, 1903), in an address to the Egyptian Congress of Medicine, discusses this mooted point in considerable detail. There

are two kinds of calculi whose etiology is positively known, viz., those formed on foreign bodies and on the ova of bilharzia. The type of stone which forms as a complication of enlarged prostate falls in an entirely separate category. So great is this latter class that due to it alone, the life expectancy of Englishmen is ten years greater than that of the Hindoo. Rainey's views on molecular coalescence relative to the causes and formation of stone can readily be substantiated since, with patience and a careful following of his process, stones can readily be manufactured outside the human body. This question of stone formation has not been followed up as closely as it might profitably be. We know too little of this important matter, which even in countries relatively free from the disorder has profound interest to those afflicted. Out of 110 operations performed by Harrison, 23 suffered from recurrence. These he divides into two classes, (1) those where the recurrence was limited entirely to the bladder; phosphatic; (2) those in which the concretion was evidently of renal origin. Following Rainey's views of molecular coalescence, the author has been able in many cases to abort the process of concretion. The preparation called "Dutch Drops," which was largely used as a prophylactic a century ago, a mixture of oil and turpentine, of guaiacum and nitric ether, amber and cloves, though 50 old, is of the utmost value. It may be taken in capsules. A salt called boracite, sodium salicylate and benzoate, as well as urotropin, have all been used by Harrison and found of value. In dealing with the condition, whatever method be used, it is important to remember that stone is a symptom and not a disease.

Injections of Calomel for Ulcer of the Leg.—The success recently obtained by A. I. Pospeloo in treating elephantiasis by subcutaneous injections of calomel, induced G. I. METKOWSKY (La Sem. Méd., Jan. 21, 1903) to employ the same drug and method of administration in a woman, twenty-six years old, suffering from a varicose ulcer of the leg of seven years' standing, accompanied by a pseudo-elephantiasis, which had resisted all the recent and standard remedies employed. He used 0.05 gram of the protochloride of mercury, hypodermatically, and locally upon the ulcer he laid wet dressings of boric acid, three per cent. with care to make the dressing reach from the malleoli to the knee. Five days after the first administration, the grayish, unhealthy, adherent membrane over the ulcer came away easily, and soon granulations upon its surface appeared. Epithelium soon sprouted and covered the ulcer rapidly. At the end of a month there was not the least trace of the ulcer and the scar appeared solid and sound.

Intraperitoneal Rupture of the Bladder.—The comparatively fixed position of the bladder renders it a little more likely to damage when filled and in the line of a blow upon the lower part of the abdomen. D. F. JONES (Ann. of Surg., Feb., 1903), in reporting two cases of this rather fatal disease, draws attention to the following symptoms, which are regarded as practically classical for this condition: sudden severe pain in the lower part of the abdomen, remaining constant; a constant desire to urinate, with inability to do so; the preference for the erect or partially erect posture of the body, rather than the recumbent; general abdominal tenderness, with but little or no rigidity. In each of his cases the abdominal wall was so lax that it bulged with the pressure of free fluid in the abdomen. A small quantity of bloody urine in the bladder is common, and dulness in the flanges likewise. As an aid to diagnosis, he does not recommend Walsham's method of injecting air into the bladder. It seems to result in intense pain and collapse with cardiac and respiratory disturbances. He likewise thinks that the boracic test is one of the

most fruitful causes of general peritonitis in these cases, and should not be carried out in these cases unless the patient is to be operated on immediately.

Radical Cure of Aneurism.—This surgical condition has no truly successful treatment unless it has involved a total removal of the sac, which itself may fail, should the collateral circulation be intestinal. R. MATAS (Ann. of Surg., Feb., 1903) offers the following conclusions concerning a method of suture within the aneurismal sac and the connection between it and the main channel. He says that the favorable statistics of the last decade may be greatly increased by adoption of this method of suture,—an obliteration of the sac, instead of the classical ligation of the arteries, with or without extirpation, the closure of the arterial orifice, supplying the sac, whether single or multiple, by sutures, and within the sac simplified technic of the other operation. A favorable case, namely, saccular aneurism, with one orifice into the trunk, is best. It is possible, by these sutures, to close the lumen without narrowing the main channel. In fusiform, traumatic aneurisms, and in all with a healthy, friable sac, lost continuity of the arteries may be renewed by building a new channel and connecting the main orifices of communication. The fear that atheroma and degeneration will interfere with healing has been exaggerated, especially since it has been shown that amputations in aged patients, with scarred arteries may well succeed. The failure and danger of the old operation of antillius lie in the fact that ligation of the main artery, above and below the sac, will not always control the bleeding from collateral vessels opening into the aneurism, or into the main trunk between the arteries of the sac and the seat of ligation. The cutting of the sac away has the danger of interfering with collateral circulation. The operation of antillius, moreover, leaves the sac as an open cavity in the bottom of the wound, which heals by granulation, and induces infection, suppuration and secondary hemorrhage. All these difficulties are increased by the extirpation.

Abdominal Contusions.—Among the symptoms which point to injury to the abdominal bones, G. E. BREWER (Ann. of Surg., Feb., 1903) states that from observations of some 20 cases of visceral injury, following contusion of the abdomen, verified by operation or autopsy, the most prominent were pain, tenderness and muscular rigidity, and likewise the most reliable. The deep-seated, localized pain following injury, and especially increased by pressure, and accompanying local or general muscular rigidity, is one of the most constant signs of intra-abdominal injury. The association of these three symptoms is almost pathognomonic of abdominal irritation. Pain, however, is often present with tenderness in injuries limited to the abdominal wall, but in these instances muscular rigidity is generally absent. In the absence of subcutaneous pain, localized tenderness with rigidity is strongly suggestive of visceral injury. Of the three symptoms, muscular rigidity is the most reliable, and sometimes the only sign. In the absence of other diseased conditions, spasm of one or more of the abdominal muscles following the traumatism may be looked upon as nature's effort to protect an injured organ from further irritation. Vomiting is a symptom often present, but not always an accompaniment of severe visceral injury. It is commonly present with involvement of the stomach and upper part of the intestinal tube, and with injuries resulting in severe shock. The signs of free fluid in the abdominal cavity are very suggestive. With this connection a large amount of fluid feces in the colon may sometimes lead to error. Free gas in the peritoneal cavity is also a valuable indication of rupture of the alimentary canal. In the absence of meteorism, this would be indicated by

abnormal tympanites and an obliteration of the liver dulness. With regard to specialized diagnosis, this writer states that in the majority of cases within his observation, the symptoms and signs are rarely so localized and characteristic as to warrant an exact diagnosis as to the site and character of the injury.

Osteopsathyrosis.—An unusual case of this rare lesion of the osseous system is reported by M. H. BIGGS (Univ. of Penn. Med. Bull., Feb., 1903), in which 22 fractures occurred in an adult within a period of ten years. The case occupies a position midway between the two types of the disease, with reference to the age of the patient,—first, in that the disease made its appearance in the twentieth year, and secondly, that after perpetual manifestation for a period of ten years recovery seems to have taken place and no fractures have been noted in the last five years. The previous and family histories are negative. He first fractured his humerus on lifting a box, and then in succession the other humerus, both femora and one rib,—about two fractures per year. His general condition has remained very good, but there has resulted marked deformity in arms and legs, with some muscular wasting and the height is only four feet and seven inches, due mostly to shortening of the femora. The radiographs showed variations in the density of the bones and a comparatively smooth outline, showing the absence of callous formation. The case reported is of the idiopathic form of fragilitas ossium, careful inquiry and examination failed to reveal any of the conditions which produce a symptomatic fragility. A general tonic and sustaining treatment was employed, no specific being known.

An Original Operation for Gastropotosis.—Among the procedures lately devised for the relief of this condition is an operation by H. D. BEYER (Phil. Med. Jour., Feb. 7, 1903), first done in 1898 and which has since been repeated in four cases. The principle of the operation is that, by placing three rows of interrupted silk sutures from above downward and from right to left through the gastrophrenic and gastrohepatic ligaments, a broad transverse fold or plication is formed in shortening these ligamentary supports and elevating the stomach to its normal position. This does not interfere with the physiological mobility or functions of the organs. The operation practised by several operators depending on the formation of adhesions between stomach and abdominal walls interferes with these functions and is often productive of disagreeable after-effects. In all cases operated by this method and the similar one of Bier, eight in number, have shown marked improvement. The author believes that mechanical and medicinal treatment of gastropotosis, will soon be superseded by operative measures.

Suture of the Brachial Plexus in Birth Paralysis.—It is fortunate indeed that some sure method of restoring the functions in these frequently hopeless cases seems at last to have been devised. ROBERT KENNEDY (Brit. Med. Jour., Feb. 7, 1903) gives a history of three cases in which he has successfully performed neurraphy in the affected part. He regards electricity as of little value in the treatment of these cases and uses it for diagnostic purposes only. The pathology of the condition is known in most cases to consist of a rupture or excessive stretching of the motor nerve fibers which run in the anterior divisions of the fifth and sixth cervical nerves. The lesion is in the true sense congenital, being caused by a trauma from excessive traction either in the case of cranial presentations or in those in which version has been performed. In whatever way the lesion is brought about, the chief factor consists probably in forcible depression of the shoulder while the head is bent to the opposite side and rotated. The attitude of the arm is very characteristic due to the paralysis of the

deltoid and supraspinatus. This prevents abduction. Flexion of the forearm is negative because of the paralysis of biceps, brachialis anticus and supinator longus. Because of the involvement of the supinator brevis there is usually extreme pronation. The prognosis in these cases is as variable as it is difficult to establish. This is because the nerves may be broken entirely or may be simply stretched, and their union or lack of union depends on the amount of scar tissue that forms. The operation of suturing them is not attended by great risk and it may safely be delayed until the child is two months old, if the faradic stimulation gives a marked reaction, however, it should be deferred, because these cases recover naturally. The technic of the operation is given in great detail. After the suture of the nerves, the rate of recovery is variable. In some cases, it begins as early as the third month and may be considered to be complete at the end of nine, but in older cases a much longer period is to be expected before any improvement is met with.

OBSTETRICS.

Anterior Transplantation of the Round Ligaments.

—In order to leave the uterus free in the abdominal cavity with no stitches or bands attached to it an operation was devised several years ago by A. H. FERGUSON (N. Y. Med. Jour., Jan. 17, 1903), in which a transplantation of the round ligaments is performed for the purpose of replacing an abnormally situated uterus. Over two hundred such operations have now been done by him without a death or complication except supuration in the external wound in three cases. The Trendelenburg position is used and a median incision three inches in length is made through the abdominal wall, the lower angle reaching the suprapubic fold. The skin and fat are dissected from the anterior sheath of the rectus on either side. Two fingers are passed into the abdomen to protect the bladder and a stab wound is made through the rectus between the two fingers, an inch from the median line and an inch and a half from the pubes. Before withdrawing the knife pass a pair of forceps beside it through the wound and seize hold of the round ligament and a portion of the broad ligament near the uterus. In order to prevent the bowel or omentum subsequently slipping between the ligaments and bladder and causing strangulation a suture is now inserted running along the parietal peritoneum from the puncture in it downward to the bladder and backward to the round ligament near the uterus. In this circular sweep the peritoneum is caught up about every third of an inch and when the suture is tied on both sides an antero-posterior partition of folded peritoneum is thrown between iliac and bladder regions on either side. The proximal end of the round ligament is then withdrawn through the rectus with the forceps and sewn with the subjacent broad ligament to the anterior sheath of the rectus muscle, leaving a stump about half an inch long between the uterus and the anterior abdominal wall. The other side is dealt with in the same manner. The operation is easy to perform because all the structures are seen as well as handled, there is no subsequent interference with the physiological functions of the uterus and the range of application is much wider than in any other similar operation.

Labor With Double Uterus and Vagina.—The case of a woman in whom both uterus and vagina were double, without the slightest communication between the cavities, is reported by H. D. WILLIAMS (Buffalo Med. Jour., Feb., 1903). The woman becoming pregnant, the fear arose that if she went on to term with such a septum, delivery might result in rupture of the bladder or rectum. It was therefore decided to dissect out the vaginal septum. This being accomplished, preg-

nancy proceeded normally and the patient gave birth to a 7½-pound child. Examination some two months later revealed but one uterus and cervix; the partition having been completely obliterated in labor.

GENITO-URINARY AND SKIN DISEASES.

Alopecia Areata.—Alopecia areata was first experimentally produced by Max Joseph, who by division of the second cervical nerve in cats obtained a condition resembling the alopecia areata occurring in human subjects. His experiments have since been successfully imitated by two Russian observers—Moskalenko and Ter-Gregorianz. These experiments must be considered as telling strongly against the hypothesis of an infectious origin of alopecia areata. A singular clinical history reported by E. RICHTER (Berl. klin. Woch., Dec. 29, 1902) further supports the views of Joseph. Richter's patient tumbled out of a wagon and after recovering from the shock of the fall felt a sharp pain in the vicinity of the second and third cervical vertebrae. She has experienced since the accident a burning sensation in the occipital region, and cannot without pain lie with her head resting on the right side. Sagittal or lateral motion of the head and neck produces a rubbing sound which can be plainly heard, and the patient experiences during such motion a sensation as of rubbing and grinding which is less painful than annoying. The signs resemble those of a tenosynovitis. Paroxysms of pain occur at this site every day, and are accompanied by a burning sensation in the right cheek and pain in the right eye. A year and a half after the receipt of her injury the patient became bald in two circular spots in the occipital region. She is otherwise a healthy woman with a rich growth of hair extending below the waist. The patient gives no history of syphilis. The exact extent of the injury in the cervical region cannot be determined; but there is evidently a nerve lesion, as manifested by the neuralgic attacks which affect the side on which the rubbing sounds are heard. A clear explanation on anatomical grounds of the distribution of the pain and the alopecia, is not forthcoming; Richter therefore assumes the existence of sympathetic nerve fibers, which have undergone atrophic or degenerative changes. It remains to be determined whether Joseph's experimental alopecia areata is not really due to trophic alterations affecting sympathetic nerves. In Richter's case the hairless parts have retained normal sensation, reacting to heat, cold and electricity.

Prolapse of the Female Urethra.—Acute prolapse of the urethra occurs not uncommonly in children, and is also occasionally seen in old women, usually associated with senile changes and a general laxity of the genital tract. In the light of its rarity in middle life, A. W. W. LEA (Brit. Jour. of Obstet., Jan., 1903) reports a case which is quite interesting. The patient ten days previous to consulting the doctor, while straining at stool felt a sudden pain in the vulval region, and noticed that a swelling had appeared there. This rapidly enlarged and caused pain on voiding, with severe pains over the hypogastrium. There was also slight hemorrhage after passing her urine. At the examination, on separating the labia, rounded mass was seen to occupy the situation of the urethral orifice, and also projected beyond the labia minora. The swelling was rugose, deeply congested, being almost black from effused blood. The tumor was very sensitive and bled on being touched. The general appearance resembled the ring of hemorrhoids though much smaller. The other organs and adnexa were perfectly normal. The condition was evidently one of acute prolapse and strangulation of the urethral mucous membrane. The

mass was excised, and to avoid a return of the condition, a wedge-shaped piece of the lowest part of the urethral membrane was also removed. Cure was effected after several weeks. The subject of prolapse of the urethra has been recently fully considered by Voillemin, in Thèse de Paris, 1900, in which a full account of the literature is given.

Favus Scroti, Coexistent with Ringworm of the Thigh, Giving Identical Trichophyton-like Cultures.

—A curious case in which two, usually regarded as distinct diseases, but caused by the same organism, is reported by A. D. MEWBORN (Jour. of Cutan. Dis., Jan., 1903). His conclusions are that while it would seem unwarranted to decide upon the essential identity of the achorian and the trichophyton from a single isolated case, it does seem that this single example may be regarded as one in which the trichophyton on the same patient, but in different parts of the body, where the conditions of soil were different, produce two clinically distinct diseases, namely, favus and ringworm. The organism was an undetermined megalosporon of probably animal origin. The irregular and interlocked mycelium found in the favus cups were then only degenerated forms, due to a lack of the best conditions in the soil for vigorous development. This conclusion seems to concur with the experimental study of the *Achorion Schoenleinii* made by Bukovsky in which he found that the more indifferent the skin is to the fungus, the more likely it is to show the favus cup. The stronger the reaction of the skin against the mycelium, the less will be its tendency to scutulum building.

HISTOLOGY, PATHOLOGY AND BACTERIOLOGY.

A Leucolytic Antileucemic Serum.—Through inoculation of rabbits and sheep with the sedimented leucocytes from the blood of leucemic patients L. LUCATELLO and C. MALON (Gazz. Osped., Jan. 25, 1903) have succeeded in procuring a serum which exhibits, in vitro, a marked leucocytic power toward the leucocytes of leucemic blood, and also toward those of certain exudates, such as the pleuritic. By adding a small amount of neutral potassium oxalate to prevent coagulation, the authors were able to obtain a large quantity of leucocytes by allowing the blood withdrawn from the patient to stand a few hours, in which time a broad stratum of leucocytes was distinctly separated from the underlying red cells. Three rabbits of medium size received endoperitoneal injections of from five to ten gm. of the leucocytes thus obtained; each receiving forty-seven injections within thirty to forty-five days. Nine endovenous injections were given to a sheep, at intervals of two to twelve days, about 120 gm. in all being given. These endovenous injections were well supported by the animal save in one instance when 10 c.c. were injected rather too rapidly. A single subcutaneous injection of 20 c.c. was then given. The first specimens of blood were withdrawn from the animals after twenty injections had been given to each; subsequent specimens being taken at intervals of from five to fifteen days. The leucocytic action became manifest upon the twenty-fifth to the thirtieth day after the first inoculation, and reached its maximum on the forty-fifth day. No appreciable difference between the leucocytic action of the sheep and rabbit serum was apparent. This leucotoxic effect was exerted upon all the leucocytes of the blood; its influence being equally marked upon the lymphocytes and the splenomyelogenous group of white cells; but both poly- and mononuclear eosinophiles showed a certain amount of resistance. Daily injections of the serum to the amount

of 5 c.c. each were then administered to three leucemic patients; and while the effect produced was not as marked as that seen in vitro, yet it was sufficiently encouraging to justify the belief in the future therapeutic value of such a serum. In the first and most favorable case there were 560,190 leucocytes to the cubic millimeter before treatment, and this number was reduced after twenty-six injections, to 375,720. A gradual decrease in the size of the spleen also took place. In the remaining two cases, diminution in the number of leucocytes was very slight, though there was noticeable shrinkage of the spleen in both.

Diplococcus Phlogogenus Pleuro-Pulmonaris.—What he believes to be a micro-organism not hitherto described has been found by L. PLASENCIA (Rev. de Med. y Cir., Jan. 25, 1903) quite constantly in the sputum of patients in whom appear congested pulmonary areas followed by pleurisy with or without effusion, after initial symptoms closely resembling those of grip. The fact that the sputum in such cases soon becomes muco-purulent or purulent and blood-streaked leads the author to the belief that suppuration or even abscess-formation takes place in the congested areas, and that the pus therefrom is evacuated through the expectoration. Neither elastic fibers nor crystals are found in microscopical preparations of such sputum, but white cells, chiefly of the polymorphonuclear variety abundant; and red cells, fibrin and alveolar epithelium are also seen. The pathogenic agent in these cases Plascencia believes to be the micro-organism to which he gives the name of *Diplococcus phlogogenus pleuro-pulmonaris* and which he describes as cocci of hemispherical shape, disposed in pairs, their flat surfaces facing and separated by a small space. Though the appearance of these cocci suggest the gonococci of Neisser in size and disposition, the form is said to differ materially from that organism; and they are slightly motile. Alcoholic solutions of the basic aniline stains color these organisms well, but their aqueous solutions stain them unsatisfactorily. They are aerobic; stab cultures in solid media especially requiring abundant air. Most of the culture media in general use serve for their development. The author made inoculations of such cultures in animals; and in the lesions so produced, and symptoms of patients in whose sputum these diplococci were seen, he finds his justification of the name given them.

PHYSIOLOGY.

Action of Suprarenal Extract.—It has been stated that subcutaneous injection of this extract exerts no influence upon the blood-pressure and this failure was assumed by many to be due to an oxidation by the tissues of the drug. From recent experiments S. J. and C. MELTZER (Am. Med., Feb. 7, 1903) find, however, that prolonged contact of the blood with the extract does not deprive the latter of its effect on the blood-pressure. Intravenous injections of adrenalin in rabbits in which the blood-vessels of one ear were deprived of the vasomotors, showed a blanching of the ear of the operated side which lasted longer than that on the normal side. Following this the normal ear became perceptibly more congested than before the injection. This seems to show that the extract favors vasodilation when the central nervous influence is intact—when the latter is absent, constriction results. The authors also demonstrated that subcutaneous injection in the normal animal had no effect on the pupil and very little constricting effect on the blood-vessels, but when the sympathetic nerve was cut the pupil remained dilated for a considerable time and vascular constriction also lasted for an equal period.

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SEX AND DISEASE.

It is a tradition of hoary antiquity that women live longer than men. Its origin is unknown, but in empiricism, which is only the common language of a people, there is often a bottom of truth, for it is but the summing up in crude thought of the lessons of real human experience. As Maudsley would put it, "reflecting the vital hold of things which living contact with them imparts, they fail not to throw valuable light on the origin and development of ideas."

In his work on "Man and Woman," Havelock Ellis speaks of the greater resistance of woman to disease, and Humphrey, writing on "Old Age," attributes to woman a natural inborn quality of resistance to dissolution that is not a product of her social environment, but the result of heredity. Thus he, as well as others, have pointed out that in the early years, before the influences of variation in the social environment of the sexes become operative, more male children die than female children, and the statistics of the death tables of Prussia from 1871 to 1881 show that from the very first year more female children live to grow to old age than male children. Thus at the end of the first year of 100,000 births, 74,724 male children and 78,260 female children are alive;

at the end of five years the figures are 64,871 to 68,126; at ten years, 62,089 against 65,237 and at fifty years, 41,228 men and 45,245 women. Humphrey also quotes that in 1873 eighty-nine people died who were over 100 years of age and of these only 10 were men.

While statistics may point out in so striking a manner what seems to be a condition, they cannot reveal any causes for the phenomenon and a legitimate inquiry arises as to what factors in sex differentiation this peculiarity may be due.

Are there diseases peculiar to one sex and not to another? Möbius has said that he knows of no disease peculiar to men, whereas there are diseases in women that are peculiarly their own. In making this distinction due attention should be paid to the fact that the localization of a disease should not be confounded with a disease process itself. Thus epididymitis has its analogue in ovaritis, etc.

Möbius further shows ("Geschlecht und Krankheit, 1903") that whereas there are few diseases found in one sex that are not generally shared by the other, that in certain diseases the man bears the brunt of his misfortune in being born of sterner stuff. Thus of bleeders, he quotes Grandidier, who shows that in Germany in 93 families of bleeders with 258 patients, 226 were men and 32 women; in England of 46 families, 141 bleeders were distributed in the unequal proportion of 134 men to 7 women. His entire study yielded 630 bleeders in 194 families, of whom 584 were men and 46 women, or 92.6 per cent. men. Litten has shown a similar disproportion of 13 to 1 in 200 families. Man's tendency to bleed for himself as well as for his country is thus made evident.

For diabetes mellitus many statistical studies seem to show that twice as many men as women die of this disease. Brain tumors have a tendency to inhabit the manly brain in a proportion of 440 men to 210 women, but, as Möbius suggests, the brain perhaps is a purely male organ, hence this disproportion is not surprising. Leucemia and hay-fever are quoted by this same author as preponderating in men.

Of the typically female diseases he gives a formidable list. Chorea is peculiarly more prevalent in females; torticollis, goiter, myxedema and exophthalmic goiter are also put to the credit of femininity. Chronic rheumatoid arthritis is also a favorite with women, Garrod quoting 89 men to 411 women; Bannatyne, 41 men to 252 women. Hysteria is almost entirely their own, and Kraepe-

lin has insisted on the great preponderance of manic depressive insanity in women.

When, from the standpoint of social conditions, the same question is considered, certain marked disproportions are manifest. Cholelithiasis, by reason of the dictates of fashion, is three times as common in women. Wandering kidneys may be attributed to similar frailties. Gastroptosis assumes a proportion of 90 per cent. of incidence in women. Because of peculiar forms of work or exposure, smallpox, yellow fever, tetanus, dysentery, and sciatica play much more havoc with men than with women. Syphilis and alcoholism may almost be said to be man's particular property, and cirrhosis, nephritis and arteriosclerosis follow in their train.

The conclusion of the whole matter our gifted author finds in the slow murder of the so-called social factors. The stress of work is one element, but far outweighing this factor are alcoholism and venereal disease. Eliminate alcohol, gonorrhea and syphilis and men will outlive the women, says our author, and thus he would deal the death blow to the theory that woman has a natural resistance to the forces of death greater than that of man.

DOES THE PRACTICE OF MEDICINE PAY?

It is to be presumed that when a man starts in to practise he does it as a means of livelihood; and yet, whether or not there is a livelihood in the practice of medicine, is a much mooted question among physicians themselves.

Any after-dinner conversation among doctors is apt to turn upon the subject. No one will exactly state his own case, but all will discuss the probable validity of the report that such an one is making twenty thousand a year, and that such another does not make his office rent. Someone will always quote the fact that the average income of a physician in New York is but \$1,200 a year; and then there will follow an inventory of the necessary aids to an income, such as a rich wife, a private fortune, a professorship, speculation in stocks, or unbounded gall. Some one of these cash men, silent as to his own income, hints at a probable source of his brothers' prosperity.

No one will come out frankly and squarely, as Dr. George R. Patton has done, and discuss the practice of medicine from a business point of view. In his little paper "Does the Practice of Medicine Pay?" reprinted from the *Northwestern Lancet* and sold to the profession for 10

cents, he has a sensible talk with his brothers on the business methods necessary to establish a good practice.

He waives all discussion as to methods of obtaining patients by social tricks and simply says that only courteous manners and professional skill, combined with sympathy in the sick room, will make a growing practice.

His text is that it is easier to get a clientèle than it is to get the money to pay for it and it is by far harder than both combined to keep the money after it is collected.

He lays down as a first law that a fee is only half earned when services have been rendered and that the other half of it must be earned by collecting it. He then offers very sound advice on methods of collecting and says, from the consensus of many opinions, that the income from practice is the most satisfactory when made by monthly collections. Business men, he states, would have immense losses did they collect quarterly. If they collected semi-annually they would probably fail.

Bills should, at all events, he says, be collected quarterly and, if possible, should be made through a collector who keeps the books and makes out the accounts.

There is a good deal of false effort put on by our profession. Many a man who needs the money will not send a bill more than once a year, or possibly six months, in the sublime hope that he may be thought to be unneedful of it, as the well-known physician whose income is supposed to be in direct proportion to his lack of concern about it.

This direct appeal to physicians to be sensible, accurate, and thrifty is a healthful one. In these days of free clinics, abundant hospital privileges, and charitable organizations a physician is supposed to be more interested in his noble calling than in his income, and the more he feels the need of funds the more he fears to show it by doing anything that might be called commercial.

But, according to Dr. Patton's philosophy, the doctor does his patients a kindness to send them small bills frequently and to save their self-respect by not permitting them to get into arrears. He teaches himself self-denial by forming a habit of saving a definite proportion of his income and he increases his own and his patient's respect as well as his family's comfort, by not being too proud to be known as a good business man and a careful collector.

ARE WE IMPROVING OUR OPPORTUNITIES?

"The whole world's queer but thee and me, and some days even thee's a little queer, Rachel!"

ALTHOUGH the speaker and the good, quaint sect to which he belonged are long since dead, the truth of this saying is unaltered, and it forms an integral part of the creeds of the much more mundane and crafty sects which have succeeded. Whether we look at Isaiah 3d, as the latter days prophet Dowie styles himself, or at the leaders of those fanatical farmers who, a year ago, forsook all and journeyed out into the wind-swept wastes of Manitoba in fantastic quest of the Saviour, or contemplate the doings of the Point Lome mystics who in their Aryan Temple derive their inspirations from the visions of starving children or at any one of a hundred others—but one conclusion is possible, that these leaders, who profess so much, in reality give nothing and have created nothing.

Is it necessary, is it right, is it true to the traditions of the art we practise, that individually and collectively we should yield without an effort to retain or regain it, the care of that host represented by the new sects to the ignorant layman, or, as is too often the case, to the charlatan and the quack?

The longer we practise medicine the more distressing becomes our appreciation of our utter lack of preparation to cope with the finished art of the mind-healer and the layer-on-of-hands. It is largely our own fault and the reaping of our fathers' sowing that we have not yet awakened to the simple truism that mind predominates matter. In our sometime obstinate refusal to give guidance and sympathy to the obsessions of our patients we are often deliberately giving them into the bondage of the charlatan. Some of us are too lazy to study and minister to the psychical phenomena of patients—it is easier by far to say to them, "Tut! tut! away with your delusions!" As average practitioners, are we not so hidebound in our arrogant love of the physical as to render us impervious to psychical phenomena?

While we may not like it, the fact remains that much leaven has come to medicine from extra-mural sources. A great deal that is very, very good for our patients has been crowded down our throats. Was not Tamplin an ostracised quack until a wealthy and iconoclastic Englishwoman allowed him to operate upon her son's clubfoot? Her song of cure resounded throughout England, making Tamplin and his method

which, as a wandering vagrant, he had learned in the south of France, the talk of the day.

Now we give one one-hundredth the dose of calomel used by our grandfathers. The same good old gentlemen used jokingly to say that Faragut need never have had so much bloodshed on the lower Mississippi; one grain of Epsom salts in the headwaters of the river would have devastated Louisiana with dysentery and saved the lives of countless soldiers! The sect that these old men derided is but sparingly found among us, but it is still teaching many truths, from which we have strayed since the days of Hippocrates II.

To-day our city is swept with a wave of vegetarianism. Many are the attractive restaurants where for little money may be had such delicate dishes as "Vegetarian Irish Stew," "Timbale of Mock Chicken." See the type of man and woman eating the "natural foods that grow upon God's plants and vines and fruit and nut trees." They do not recognize the platitudes, if their empty bellies do, for has not the crafty manager printed on every bill of fare, "Opinions of Eminent Scientists." Poor old Cuvier and Linnæus and Virchow masquerading in expurgated phrase and sentence and made to prove that man is a mycophagist. It is cleverly done. There is not one physician in a thousand who could successfully knock the props from under these bombastic and impudent arguments. There is no more exact or delicious description of the craft, and of the cunning they display in their appeals to the masses than the following lines from a well-known author: "The old platitude will prick with pleasing surprise many minds when it has been enucleated from the gross crudities of ill-digested thought and jolting jargon of maimed and dislocated grammar in which the affectation of the charlatan, eager, mountebank-like to draw vulgar attention to himself and his wares, has deliberately chosen to involve it."

Here then lies the secret of the success of the charlatan and the quack. We are not making the most of our opportunities. If men and women are free from organic disease, yet lacking proper psychical training we often take little interest in the case, and are often at a loss both as to diagnosis and to treatment.

We have learned from the quack Tamplin: we have modified our therapeutics by reason of the many pathies, but in each case only by having it beaten through our conservatism. Are we now far enough advanced to grasp the opportunities

which come, or must we be hounded into action by popular opinion? Let us *now* take the tiller and sail the ship of our heritage, treating the soul-sick man as well as him whose body is diseased.

ECHOES AND NEWS.

NEW YORK.

American Pediatrics and English Reviewers.—In a recent review of Dr. L. Emmet Holt's work in the *Lancet*, March 14, the following is worth quoting, coming from so high a source: "As a work of reference on the diseases of children we regard this recent edition of Dr. Holt's book as even more complete and trustworthy than the last edition of Professor Baginsky's classical work on the same subject. . . . Moreover, it is more readable, more practical, and more up-to-date. In fact, in our opinion, there is no work on the subject of the diseases of infancy comparable with the volume under review, and with the exception of Dr. Rotch's 'Pediatrics,' no book with which we are acquainted contains anything like such full, systematic, and accurate directions for the feeding of infants, either in health or disease."

\$50,000 for a Ward in Manhattan Eye and Ear Institution.—Mrs. Ann Augusta Thomas, widow of General Samuel Thomas, and her children, Mr. Edward R. Thomas and Mrs. R. Livingston Beekman, have given \$50,000 to the Manhattan Eye, Ear and Throat Hospital to endow a ward of ten beds, to be known as the "Samuel Thomas Memorial Ward," in the proposed new hospital building for that institution.

The Registered Nurse Bill.—There was another hearing last week on the bill to give graduate nurses who pass a Regents' examination the designation of R. N. (Registered Nurse). Several amendments have been made, but physicians still insist that the examining board should not be composed exclusively of members of the Nurses' Association. They hold that male nurses should be represented, as there are needful questions which no woman could ask; and they believe also that there should be one or two physicians on the board.

Cornell University Medical College.—The Regents of the State of New York through President Schurman, recently asked the Faculty of the Cornell University Medical College to suggest an outline of a medical course which they considered ideal for the average student of medicine. The Faculty have had to consider a course which is suitable for two classes of students, those who have had the advantages of an academic or a scientific education and those who have come directly from the high school, as the policy of the University has been to keep its doors open to all who apply within the widest limits consistent with any technical education. The policy throughout is to induce men to pursue the study of natural science as early as possible, and for admission, students, instead of being allowed to matriculate with any 48 Regents' counts, must present a certain amount of mathematics, and a thorough knowledge of the English language. This is controlled by an arrangement with the Regents who specify on their certificates the above matter, and state that it fulfils the Cornell requirements. A knowledge of Physics and Inorganic Chemistry is an essential throughout the study of medicine, and should be a requisite for admission to the course, but as yet it is scarcely touched upon by many, even of the academic curricula, and, therefore, the Faculty have felt compelled to allow the subject to

remain in the first year of the medical course. To pave the way for its abolition as speedily as possible students who present satisfactory certificates of having completed these courses, or who can pass examinations on them are excused from all Physics and Chemistry in the first year and given the Physiological Chemistry, which is placed in the second year. A general outline of the four years' course is then divided in two periods. During the first two years the fundamentals of Anatomy, Physiology, Organic Chemistry and Bacteriology are covered, and during the final two years Medicine, Surgery and Therapeutics or *Materia Medica*, with the allied branches and the specialties are taken up and completed. To induce men to come better prepared and to allow for the more capable and industrious, the curriculum is so arranged that much of the final two years of the ordinary course can be anticipated, beginning with the second year, and the time thus gained in the final year is devoted to practical dispensary and hospital training.

The first year contains Anatomy, Normal Histology, Physiology, Biology, Inorganic Chemistry and Physics. Those who enter with Biology, Inorganic Chemistry and Physics are excused from these subjects, and take the Organic and Physiological Chemistry, Bacteriology and Pharmacology of the second year. The latter year contains Anatomy, with the histology of the nervous system and the organs of special sense, Physiology, with organic and physiological chemistry, Pharmacology, Bacteriology, Gross Pathology and the principles of Medicine, Surgery and Obstetrics. Those who have anticipated some of this in their first year are given Toxicology, *Materia Medica*, and mannikin obstetrical work in the third year, and in addition short practical courses in the Dispensary.

In the third year, Gross and Histological Pathology, Medicine, Surgery, Therapeutics, and the specialties of Obstetrics, Pediatrics and Neurology and Genito-Urinary Diseases are taken up. These subjects are completed in the fourth year, together with all the remaining specialties. The Faculty have insisted upon the importance of a certain number of didactic lectures in all of the main subjects to inform the students of the advancing general principles, and of the new theories and fallacies which are constantly brought forward. In connection with this it is interesting to note that of the 154 hours specially allotted to the general subject of Medicine in the third year, only eighteen are devoted to didactic lectures, the remainder are devoted to recitations, clinics, bedside and dispensary teaching. In the fourth year, with a nearly similar total number of hours for medicine, there are only ten didactic lectures. The other subjects divide their time in a corresponding proportion between didactic and clinical instruction.

New Site for the Manhattan Eye and Ear Hospital.—It was announced this week that the Manhattan Eye and Ear Hospital would move to a new site and erect a building capable of affording the greater facilities which are demanded by the institution's growth. The directors are planning to raise a fund of \$200,000. The present hospital building occupies a plot 99 x 110 feet on Park avenue and Forty-first street, one block south of the Grand Central Station. This plot is now too valuable for hospital purposes, and the directors believe that by selling the property they would obtain enough capital to purchase a larger site, in a less valuable location, and to build a modern hospital of at least double the present capacity. The endowment fund of the hospital is now \$171,000, but the directors say that they do not feel justified in proceeding to build without an additional sum of \$200,000. One of the directors and his family offer a subscription of \$50,000,

conditional on \$150,000 being raised by January 1, 1904. The great increase of eye diseases in New York, the closing of the throat department of one of the special hospitals, and the great growth in population, has widened the field of the Manhattan Eye and Ear Hospital. The hospital is now too small, every ward and room being overcrowded. It has been found necessary to provide the sitting rooms and playrooms with beds to accommodate the increasing demand. The basement, formerly the laundry, has been converted into clinic rooms. The number of operations in a year averages 1,200 on the ear, a like number on the throat and larynx, and 2,500 on the eye. In 1890 two wards were set aside for the treatment of contagious eye diseases, this being the first, in fact for many years the only, hospital in this city which provided such accommodations. Seventy-five per cent. of blindness is ascribed to contagious ophthalmia. The increase in the number of cases has been so large in recent years as to be regarded as almost epidemic in schools and factories. This affection is most prevalent among those who are unable to pay for hospital care and attendance, and nearly all require nursing day and night. Since its organization in May, 1869, 325,000 patients have been treated at the Manhattan Eye and Ear Hospital, the present average being 1,225, exclusive of outdoor cases to the average number of 20,000. In the course of the first year 1,717 new patients were treated, and the increase in new cases is shown in the following: 1877, 3,852; 1882, 5,666; 1887, 9,526; 1892, 14,123; 1897, 20,272; 1902, 23,078. The medical staff numbered 20 in 1877; it was increased to 86 in 1902. The hospital is supported by volunteer contributions wholly, and is intended for the free treatment of such persons as are too poor to pay for medical advice.

Manhattan Dermatological Society.—Regular monthly meeting was held March 6, 1903. Dr. L. Weiss, chairman.

Dr. I. P. Oberndorfer presented his case of milia and lichen to show the improvement of the former eruption, the result of treatment. This case was shown at the November meeting. At that time the eruption of milia was more abundant and well seen on neck and chest; the milia are much reduced in size and number and generally the condition improved. The lichen eruption now predominates and is present on neck, chest and some new lesions on left arm; patient was treated with Unna's ointment and Asiatic pills; patient began with $\frac{1}{100}$ grain arsenic, 1 pill, and gradually increased to 16 pills (or $\frac{1}{2}$ gr. arsenic) without physiological effect.

Dr. Abrahams recognizes the two lesions still present; the milia much improved; he advised further continuance of the line of treatment. Dr. Sobel thought the milia much improved; the lichen he believes remains unchanged; the best treatment for milia was undoubtedly the curette. Dr. Gottheil agreed with the former speakers; of significance was the production of a row of lichen papules following trauma (such as a pin scratch) upon an area of clear skin, in a patient affected with lichen planus; he asked whether the phenomena was observed by other members. Dr. Kinch asked whether the same result would follow the application of a mustard or other irritant plaster; also whether simple scratching, the result of itching, would produce the same effect; if so (in the latter case) it was reasonable to suppose that a new outbreak of lichen papules in such a patient, was preceded by pruritis, and the scratching was the irritant. To the latter question there was some difference of opinion: Dr. Ochs stated that the pruritis preceded the eruption and the irritation would produce mother lesions of lichen; this was invariably true of lichen; he did not observe it in psoriasis. Dr. Bleiman said that the phenomena may be ob-

served in individual cases, but in general he regarded pruritis as secondary to eruptions. Dr. Cocks had his doubts on the question; a case of lichen recently observed, the pruritis apparently preceded the eruption. As to the eruption present, it was more typical of lichen than when first observed.

Dr. L. Weiss called it lichen obtusus, but not typical; some milia showed marked infiltration; he looked upon the latter as beginning fibromal cutis. As to Dr. Gottheil's statement it resembled the question of lues and irritation, and psoriasis and irritation; reasoning by analogy the same could be true of lichen.

Dr. W. S. Gottheil showed a male patient (Turk) with lesions of xanthoma tuberosum (non-diabetic) on extensor surfaces of both knees, the flexors of fingers, the back of both hands, and a few near elbows. Lesions present for some time. They were yellowish or orange-colored, quite hard and nodular; some lesions softer and pinkish in color. Urine does not show sugar.

Dr. E. L. Cocks stated that the hardness of the nodules did not exclude xanthoma tuberosum. Dr. Cray said many of the nodules looked like keloid to him; the hardness of these masses was not typical of xanthoma tuberosum. Dr. Oberndorfer called it xanthoma tuberosum; he thought many of the tumors were undergoing degeneration, hence the difference in consistency. Drs. Kinch and Sobel thought the nodules on fingers are rheumatic nodes; on knees and elbows agree to diagnosis of xanthoma tuberosum. Dr. Weiss does not hesitate to call it xanthoma tuberosum. Dr. Abrahams also accepts the diagnosis; the non-diabetic form was very rare.

The treatment of erysipelas was the subject for discussion by the members present.

PHILADELPHIA.

Philadelphia Hospital; Head Nurse Resigns.

Miss Marion A. Smith has resigned the position of Head Nurse and Directress of the Philadelphia Hospital Training School for Nurses to accept the superintendency of the University of Pennsylvania hospital. The resignation takes effect May 1. Miss Smith has held her present position since 1887.

Sudden Death of Dr. Carncross.

Dr. J. Augustus Carncross, house physician at the Friend's Asylum, in Frankford, died unexpectedly of heart trouble March 20. Dr. Carncross had been ailing, but was not confined to bed. He received the appointment of house physician seven years ago. Dr. Carncross was fifty-eight years old, and a native of Ohio. He was a graduate of Jefferson Medical College, class of '76, and a member of the Philadelphia Medical Society and the Philadelphia Medical Club.

Museum Jar with Improved Device for Sealing and Labeling.

At the Pathological Society March 12, Dr. W. M. L. Coplin exhibited and described a device for sealing museum jars that eliminates many of the disadvantages of older methods. The basis is the glass specimen box manufactured by Fettke and Ziegler of Germany. Difficulty has been found in maintaining a satisfactory seal with the ordinary materials used for that purpose. The lids may be attached by the use of paraffin or various cements, but experience with cements has not been satisfactory. With material that makes a tight joint there is difficulty in breaking the seal when the fluid in the jar becomes cloudy and requires changing. When the seal has been broken it is almost impossible to clean the jar and cover sufficiently to permit of resealing. With less efficient cements a watertight joint cannot be secured. The device exhibited is a clamp consisting of two plates of lacquered brass, reinforced at the top with ribs to prevent bending, and

joined by rods 0.5 cm. in diameter on the sides. Between the lower plate and the bottom of the jar is placed a rubber cushion, and at the top are two similar cushions, one between the glass lid and top of the jar, and one between the lid and the brass plate. The rods have milled heads and thumb screws by means of which the plates are approximated, thus securing a tight joint, and one that can be made or unmade in a moment. The brass plates are made rectangular in order that the jars may be placed on the side or edge as well as on end. Labeling is provided for by a clamp attached to the top plate of the jar. Into this cards similar to those in a card index may be inserted.

Heart Showing Chronic Tuberculosis of the Pericardium with Involvement of the Myocardium.—This specimen was shown by Dr. A. G. Ellis, having been obtained at autopsy upon the body of a male negro, aged twenty-four years. As tuberculous pericarditis is not a notably infrequent condition the specimen was presented because of the extent, rather than the nature of the lesion. The symptoms presented by the patient had been those of pulmonary tuberculosis of the left lung, these dating from an attack of pneumonia five months before, from which the patient never fully recovered, the succeeding symptoms being pain in the chest, cough, copious expectoration, night sweats and progressive weakness. Other than rapid action of the heart with weak pulse there were no cardiac symptoms, and the heart was not displaced. Autopsy showed the mediastinal tissues to be studded with variously sized grayish or yellowish nodules, some of which had caseous centers. The heart and the mediastinal tissues formed practically one large adherent nodular mass. Both pleura were universally adherent. In freeing adhesions upon the left side, the lung, which was markedly caseous and contained many cavities, was extensively torn. The pericardium is universally adherent, the external surface being studded with yellowish nodules varying from 0.2 to 2 cm. in diameter. In a number of places these nodules extend into the heart muscle, in some instances to a depth of more than a centimeter. The involvement of the heart is greatest in the left ventricle, but is quite extensive in the right. The liver, spleen, pancreas and kidneys contain miliary tubercles. Microscopical examination shows the adhesions uniting the two layers of the pericardium to be formed of granulation and fibrous tissues in which are disseminated areas of caseation. At many points the visceral pericardium has disappeared and the heart muscle shows invasions of lymphoid cells or even granulation and fibrous tissues. Sections from a dozen blocks have been examined, but in none of them have structures bearing any resemblance to an anatomical tubercle or a giant cell been found. A very few tubercle bacilli were found in one section.

The Lymphatic System and the Tonsil.—The Section on Otology and Laryngology of the College of Physicians was addressed at the meeting of March 18 by Dr. Henry L. Swain of New Haven, Conn., on "The Lymphatic System and the Tonsil." Dr. Swain began his address by relating in detail the history of a case that illustrated the reverse of the general statements made by writers regarding the effect of the tonsils on the lymphatic system. The patient was a man of 63 who, when first seen, had a moderate enlargement of the cervical lymph nodes. With this condition there was an enormous enlargement of both faucial tonsils and marked enlargement of the lingual tonsil. The tonsils were pale and showed no trace of inflammation, the condition being apparently that of simple hypertrophy. No pain was felt in these masses of tissue. The diagnosis of a constitutional condition affecting the tonsils was made, and treatment by Fowler's solution, etc., in-

stituted. The tonsils soon markedly diminished, and the patient ceased coming for a time. When he reappeared the tonsils were again enlarged, but again responded to treatment, and the patient gained 28 pounds. The spleen was slightly enlarged at this time, and a history of axillary enlargement when the patient was twenty-five years old was obtained. A third time the man returned with enlarged lymph nodes in all parts of the body. The leucocytes were increased, but did not give the picture of lymphatic leucemia. Progressive weakness was followed by death. Examination of the tonsils and lymph nodes showed the enlargement to be due to simple hyperplasia. The case was evidently one of lymphadenoma, in which the general involvement had extended to the tonsils. It was detailed at length to emphasize the fact that the tonsils are not only lymphoid tissue, but are an integral part of the lymphatic system. In proof of this, Dr. Swain cited a case of a young man of twenty years, who, from an acute streptococcal tonsillitis developed acute Hodgkin's disease and died in six days. The function of the tonsils is the same as that of the other lymphatics, but in addition they absorb various materials that come in contact with them, because of their situation. Too many members of the profession have come to regard the tonsils as extra projections of tissue, to be removed under the least provocation. It should be remembered that when the tonsils are diseased a part of the lymphatic system is in an abnormal condition, and this means interference with what are perhaps the blood making or destroying organs of the body. Tonsillar infections become more widespread in children because the vessels are more widely open, as can be demonstrated by injecting them. The tonsils then are to be viewed not as irresponsible masses of tissue, but as doing much with the blood and lymph. A practical deduction is that free rein should not be given to their indiscriminate removal. When operation is performed it should be done thoroughly. Even then some of the tissue is left, and there is still a chance for infection. Removal does not give immunity, but only diminishes liability to infection.

CHICAGO.

Cleaning Sick-rooms.—The Department of Health advocates the vacuum method of cleaning sick-rooms, saying that "consumption, pneumonia, influenza, scarlet fever and similar diseases are known to be spread by infected dust of the sick-room, so the distinct and recognized purpose of the operation shall be to remove, and not simply to stir up the ever-gathering dust."

Prevalence of Scarlet Fever at Lake Forest.—Owing to the continuation of the epidemic of scarlet fever at Lake Forest, the University will be closed for two weeks. The quarantine on the University grounds has prevented an extension of the disease among the students, but it is spreading in the town. Most of the new cases have been in families where the disease already existed. No new case has occurred among the University students for about eight weeks.

Addition to Augustana Hospital.—An addition to this hospital will be erected this spring at a cost of \$100,000. It will be fireproof, six stories high, and 110 by 130 feet.

Smallpox.—Seven new cases of this disease were reported during the week. Only one patient, an adult, had been vaccinated, and he in infancy. No case of \$100,000. It will be fire-proof, six stories high, and 110 Chicago for years.

Illinois State Medical Society.—This Society will hold its annual meeting in this city, April 29 and 30, and May 1 and 2. The Committee of Arrangements is making every effort to secure a large attendance.

Clinics at all of the colleges and hospitals will be given for a week preceding the meeting. The Committee will send out twenty thousand copies of the preliminary program. A copy will be sent to every physician in the State of Illinois, and also to physicians of adjoining States.

A Method of Determining the Internal Dimensions, Configuration and Inclination of the Female Pelvis.—Dr. Hugo Ehrenfest, of St. Louis, Mo., read a paper, by invitation, before the Chicago Gynecological Society, on this subject. He demonstrated two instruments constructed by Dr. Julius Neumann and himself, called pelvigraph and kliseometer. The construction of the first mentioned instrument is based on the following principle: If a straight rigid rod is so moved within a plane, that in all points of its course it is kept parallel to its first arbitrarily chosen position, and, at the same time, one of its ends is permanently kept in touch with a given line, then necessarily its other end will create, if approximately equipped with a marked, an exact duplicate of said line. In this way it is possible to produce in a comparatively easy manner by means of the pelvigraph, an exact picture of a median vertical section through the pelvic canal in the living, or to measure the distance between any two points within the pelvic cavity. The speaker explained the manipulation of the instrument on a skeleton pelvis, and demonstrated a number of such diagrams taken from different patients with pelvic deformities. These diagrams showed the character of the deformity, and gave all the conjugates in actual size. Their value for scientific, and especially for teaching, purposes is obvious.

The second instrument, called kliseometer, is very simple in its construction. The author said that it is destined to directly measure the inclination of the external conjugate. The combined use of both instruments permits of determination of the inclination of the true conjugate in the living, a problem that as yet has been unsolved. By means of the kliseometer, the inclination of the conjugate at the obstetrical outlet is measured. The angle found is with a protractor transferred upon the diagram of the pelvis, and in this way an angle constructed, representing the real inclination of the pelvis. The speaker passes once more the diagrams of the different patients in which, by means of this construction, a line is found representing the horizon. If these pictures be so held that the said line parallels the horizon, a very instructive conception is gained as regards the position the pelves had in the upright women. These two instruments offer the possibility of graphically reproducing the form and exact dimensions of the most important sections through the pelvis, and of permitting measurement of its real inclination.

GENERAL.

School Inspectors in Strassburg.—Strassburg has appointed three school physicians. Each one has to guard the health of 2,000 children and his salary therefor is \$250 a year.

The Sale of Poisons.—According to a letter in the *Chicago Daily News*, the laws regulating the sale of poisons are dead letter laws in Illinois and especially in Chicago. The State Board of Pharmacy must be derelict in its duties and lacking in sense of professional ethics, or it would make things exceedingly warm for the druggists who sell the means of suicide to any man, woman or child handing over the counter a dime or two. The druggist who is willing to retail opium, morphine, codeine, chloral, cocaine and other drugs equally destructive and deadly to anyone having the price is morally the murderer of a fellow human being—even if not legally so considered at present. It matters not whether

this destruction is accomplished at once by the swallowing, for instance, of a sufficiency of carbolic acid, tincture of opium or any one of the alkaloids used by the public for self destruction, or whether life is destroyed gradually through the continued use of drugs in quantities smaller than the lethal doses.

"Is this community so commercialized, so bereft of conscience, that this sort of thing can continue indefinitely, continue with the legislature in session and the Board of Pharmacy able, if it so wills, to stop the infernal traffic? Look at the situation from another angle. There are comparatively few pharmacists who prostitute an ancient and honorable profession by selling these alkaloids to any one 'having the price.' The great majority refuse this 'trade,' and dispense the drugs only as directed by competent physicians for their legitimate uses. This is everybody's business. Many suicides are now committed with carbolic acid, an exceedingly painful death. For antiseptic purposes in the family the harmless boric acid would do as well. Pure carbolic acid should not be sold at all over the counter. Take cocaine as an example. What earthly use can a private person have for this deadly drug, used almost exclusively for local anesthesia by physicians and dentists? What excuse can a pharmacist give in selling it as a powder in dime or quarter-size bottles? His only excuse would be that he needs the money. He needs a conscience more."

The Cause of the Sleeping Sickness.—According to Dr. Aldo Castellani, special commissioner sent out by the Royal Society, the sleeping sickness of Uganda and the related African regions is due to a special form of streptococcus that has a number of differential biological characters, separating it from the well-known pathogenic cocci. It occupies a position between the *S. pyogenes* and the *S. lanceolatus*.

Uses and Limitations of Hypnotic Suggestion.—Dr. William Lee Howard gave an interesting clinical lecture upon this subject to the Faculty and Senior Students of the College of Physicians and Surgeons, of Baltimore, on Monday last.

SPECIAL ARTICLE.

BYWAYS OF MEDICAL LITERATURE. XIII.

COMPARATIVE PATHOLOGY OF PLANTS.

At the recent meeting of the Medical Society of the State of New York at Albany, Dr. Harvey Gaylord of Buffalo described a special plant disease that causes tumors in trees and has many similarities with cancer in human beings. The etiological factor is a microscopic parasite called the *Plasmodiophora brassicae*. The disease can be transferred from tree to tree by inoculation, and the tumors are caused by an overgrowth of the cells of the tree, each one of the cells containing a parasite. It is hoped that study of this will throw some light on the problem of the etiology of cancer, which, it is now frankly confessed, is as yet as far from solution as it ever was. In fact, one of the authorities, Prof. Lubarsch, stated not long ago that it is probable that other methods of investigation than those at present in vogue will have to be invented before definite information can be obtained with regard to the etiology of cancer. In the meantime it is perfectly clear that much light may be thrown on bacterial diseases in man by careful investigations in the comparative pathology of plants and the study of their parasitic diseases. After all it is perfectly clear that most of the parasites of man, even those of bacterial nature, pass a stage of their existence outside of the

human body, or at least they exist for a long time without necessarily requiring to have human beings for their hosts. Just what this condition of extra vertebrate existence may be is not yet known, even for a single one of the bacteria. It is possible that some of the bacterial diseases of man may be represented by special pathological conditions in plants.

In the light of this it is interesting to find the review of the plant diseases that existed in this country during 1901, in the year book of the Department of Agriculture for that year, issued not long ago. There is scarcely one of the fruit or nut trees that did not suffer from some bacterial disease during the year. Many of the so-called blights that affect fruits, or such tubers as the potato, are really bacterial diseases. Among tomatoes last year, the bacterial wilt was troublesome all over the South, and especially in the Gulf States. A wilt disease of the tomato, whose parasitic cause has not yet been studied, raged in many of the Southwestern States and Territories, especially California, Arizona and Utah. There is a wilt disease of the watermelon that has been very prevalent in the South, and great losses were suffered, until many of the growers have had to adopt the advice of the Department of Agriculture not to grow watermelons twice on the same land. Another form of wilt disease nearly ruined the cabbage crop in certain parts of North Carolina and did great injury in Maryland.

Cotton also suffered from a form of wilt disease, which affects all the cotton-growing States and is as injurious to Sea Island as to upland cotton. Curiously enough, certain brands of cotton have been secured by selection that are very resistant to the disease, and these are now being planted generally in parts of the country that were liable to be affected especially by the wilt.

There is a special well-known form of bacterial blight that attacks edible nut trees, and that last year affected especially the walnuts in California. The Department of Agriculture has demonstrated that this disease can be partly controlled by spraying, but that the only means absolutely to eradicate it and to prevent future losses is by the selection and breeding of resistant varieties.

We are accustomed to think that at least the plants, if furnished with the proper amount of nutritious material in the soil and with favorable meteorologic conditions and reasonable protection, would grow healthily without more ado. As a matter of fact, however, all of them are liable to many diseases of different kinds. When plants fail it is often not because of weather conditions or lack of nutritive material, but because of the presence of parasites. The most important advances in recent agricultural science is the breeding of varieties of plants and fruits, resistant to the attacks of disease as well as to unfavorable weather conditions. It is well known that there are many plants which would survive unfavorable weather only that their lack of resistive vitality after exposure to it makes them more liable to the attack of various parasitical diseases that eventually cause their destruction. Once a parasitic plant disease has gained a hold, it acts as in the corresponding conditions in human beings, and takes on a virulence that enables it to affect even healthy plants.

MEDICINE AS A CAREER.

In a recent number of the New York *Sunday Tribune*, Dr. D. B. St. John Roosa discussed medicine as a career for the rising generation. He suggests that the two most important things for a young man who is about to enter on the study of medicine, are a good physical constitution and a high sense of honor. No boy should start out for preparation for the study of

medicine unless he has a sound mind in a sound body and no physician can be entrusted with the sacred responsibility of the body of another human being, or with the personal history of his patients unless he has the qualities of reticence and a high sense of honor, added to a kindly and tactful disposition.

Dr. Roosa is of the opinion that most young men would find more lucrative occupations or professions than that of medicine, to which they would have to devote neither so much time in preparation, nor so much time and labor afterward in the practice of their profession. As to ultimate financial success he says: "It is very difficult to make comprehensive statements. The estimate as to what constitutes financial success varies very much in different places. A successful practitioner of medicine may be able in almost any community to have the comforts of life, so far as his time will allow him to enjoy them. In the legitimate practice of medicine, wealth is very rarely to be obtained, however, no matter how successful, or how high the rank of the man who pursues it. It is true there are exceptions, but a close study of these cases shows they are really exceptional, that is to say, we suppose that the men are geniuses of a high order, who would have made a wonderful success in any undertaking in life."

No man, Dr. Roosa thinks, should ever depend upon the practice of medicine with a view of acquiring a large fortune. Of course, there are some who from various causes, do not even acquire the competence necessary for the proper care of themselves and their families. These are the careless, the indolent, the tactless men, the men of bad habits and the men who ought not to have been in the profession. It must be admitted that there are some also who had not the means for the better preparation, or for whom the environment was too arduous.

"Chill penury repressed their noble rage
And froze the genial current of the soul."

He concludes with this paragraph: "But with all that may be truthfully said as to the severity of life in the medical profession, the occasional ingratitude of those who owe much to it, the inability to amass a great fortune, the want of appreciation by the general public of what it has already accomplished, there is no calling in which a well-prepared and competent man may have a more useful, or a happier life, whether in town or in the country."

ROYAL PHYSICIANS AND STRAIGHTFORWARDNESS.

The recently reported illness of the King of England recalls an experience of his with a consultant physician not long before Christmas. The consultant was Sir Richard Powell, who is well known for his bluntness, and who is said to owe not a little of his extensive practice to the fact that the aristocracy are perfectly sure that he will tell them exactly what is the matter with them without ado or tergiversation. His visit to his Majesty was typical of his ways in this matter. After asking his Majesty a few questions in regard to his general health, the doctor laconically ordered him to strip. The King pleasantly asked what portions of his clothing he should take off. On being told to strip to the waist he quietly did so.

The doctor then proceeded to examine him in the usual manner, utilizing the stethoscope and plexor and pleximeter for this purpose, until the King, who was not used to this vigorous sort of examination of all his organs, became anxious that it should conclude. Meanwhile Sir Francis Laking, physician-in-ordinary to the King, entered and watched the procedure.

When the practical baronet brusquely pronounced: "You have eaten too much; you have drunk too much;

I will send you a prescription to put you right," he departed with the scantiest ceremony. He had hardly reached the door when Sir Francis Laking, who was following him, overtook him and made a protest against his abruptness. The eminent specialist, who was apparently not in the best of humor, only retorted: "My dear Laking, if there is any squirming to do you must do it."

Dr. Laking returned to soothe his Majesty's ruffled feelings, and remarked by way of palliation: "Sir Richard is a very busy man just now." The King's reply, which typified the state of his mind, was: "Good God, Laking, I thought he was going to tattoo me."

A story of quite a similar order was told of the same physician not very long ago. It concerned the late Duchess of Manchester. Sir Richard met her by appointment at her house, and found her very handsomely dressed to receive him. After listening, with some impatience, to the rather lengthy tale of her woes, he said that the only way that he would be able to be certain that there was nothing serious the matter with her would be by carefully examining her heart and lungs, and he suggested that she disrobe. "But, Sir Richard," she said, "I haven't my maid here, in fact, I permitted her to go out some time ago." To this the Baron replied at once, "Madame, I have no intention of examining your maid. It is *your* chest that I wish to examine." It is not said what the Duchess thought, though, as she wanted Sir Richard Powell's advice, he had the opportunity to examine her chest before he left the house.

HELEN KELLER'S EXPERIENCES.

In one of the magazine numbers of the *Outlook*, a number of prominent literary men answer the question, Which are the ten books or parts of books in prose or verse most characteristic of American genius and life, which would not have been written on any but American soil. Among the ten books selected by Thomas Wentworth Higginson is Helen Keller's "The Story of My Life." This is the young woman already mentioned in this column, who, though congenitally blind, and deaf, and dumb, has succeeded in getting an education involving the highest culture, in acquiring several languages, in securing a degree at Radcliffe, and in general in developing her intellectual life to a very high degree.

Physicians often want literary encouragement for discouraged patients. There is nothing more stimulating than this story of the young woman who has succeeded against such seemingly insuperable difficulties in securing her education. As Thomas Wentworth Higginson says, "What heroine of romance has constructed for herself, aided only by one faithful companion, a career like that which Helen Keller has described as her own. Where else could or would that career have been so thoroughly worked out? It was Mark Twain, I think," he adds, "who said that the only absolutely interesting human beings produced during the last century, were Napoleon and Helen Keller."

FAINTNESS AT THE SIGHT OF BLOOD.

There is in a large number of people, by no means all of them being women, a very curiously interesting weakness that comes over them at the sight of blood. For some the merest tinge of blood, or the sight even of a fresh cut is enough to produce a condition bordering on collapse. There is a cold feeling at the pit of the stomach, a tendency to nausea that may even proceed to actual vomiting, if there is food on the stomach, and a pale, anxious face. This state of emotionalism is intensely discomfiting to some of the sufferers, and many of them have tried all manner of means to over-

come the habit of mind or nervous condition underlying it. A more successful method than any other that has been employed is said to be the constant presence of bright or blood-red roses in the living-room. At first the grouping of many of these causes some of the symptoms of the neurotic condition they are meant to overcome, but eventually, at least, a certain amount of tolerance of the sight of blood is acquired. Curiously enough the sight of blood, after a course of the rose treatment, is always apt to be associated with the odor of roses. The psychology of the therapeutic effect, and then of the odorous association is very interesting, though there seems no reason to doubt that there is something more in the whole proceeding than merely autosuggestion or the lessening of emotivity by frequent exposition to a factor of etiology. There is a nervous control acquired by habit that strengthens the inhibitory power.

CORRESPONDENCE.

TRANSACTIONS OF FOREIGN SOCIETIES.

British.

THE SEQUELÆ OF TYPHOID FEVER—DRAINAGE OF THE KNEE-JOINT IN ACUTE SUPPURATIVE ARTHRITIS—MICROSCOPICAL EXAMINATION OF THE DISCHARGE IN 100 CASES OF MIDDLE-EAR SUPPURATION.

S. TAYLOR, at the meeting of the West London Medico-Chirurgical Society, Feb. 6, 1903, opened a discussion on the Sequelæ of Enteric Fever and Their Treatment. He analyzed 56 cases of relapse, and pointed out that in many cases a change of diet, starchy food, or an enema or purge seemed to bring about the relapse, although in many cases no cause could be assigned. Under respiratory sequelæ, tuberculous disease was mentioned, latent trouble being frequently aroused to activity. Laryngitis with necrosis might occur, leading sometimes to emphysema of the neck and a condition resembling Ludwig's angina. As regards the circulatory system, thrombosis, nearly always of the lower limbs, was fairly common. The extent of thrombosis was often large, and the clot might extend into the vena cava. Dilatation of the heart, with valvular incompetence, was also a sequela. Nervous sequelæ are not uncommon, such as definite insanity or some moral obliquity. Aphasia might occur and also peripheral neuritis. Besides constipation and meteorism, peritonitis and perforation might be sequelæ, peritonitis being possibly started by bacilli in a gland or by infection from the appendix or from the gall-bladder. Perforation might be suspected, when with a falling temperature the pulse becomes rapid, associated with the characteristic facies. Sequelæ affecting the skin, cutaneous tissues, bones, were such as noma, gangrene and necrosis. These were not necessarily due to the intensity of the fever, but to the condition of the individual.

WILLIAM HUNTER took a wider view of the definition of sequelæ. He regarded them as complications which occurred apart from the ordinary course of typhoid fever and with causes different from typhoid fever. He analyzed the cause of death in 50 cases; 48 per cent. of the cases died from perforation, 20 per cent. from pneumonia, 8 per cent. from asthenia, and 6 per cent. from heart complications, including pulmonary thrombus and fatty heart. In 10 per cent. lung troubles other than pneumonia caused death, hemorrhage in 6 per cent., and erysipelas in 2 per cent. Dr. Hunter said that the mortality was greater formerly, probably in consequence of unsanitary conditions. These would account for the greater severity of epidemics in some German towns.

A. ELLIOT considered that from the military point of view the most important sequela of the epidemic in South Africa was disability, mental and physical. In the slighter cases, men were able to do light work at the base, but for a long time the hardship of trek was quite beyond their powers. In commissioned ranks the greatest stress was on the nervous system, producing slowness of cerebration and lack of decision, often rendering the patient unfit for responsible duty in the field. Of specific sequelæ the most common and perhaps the most important was phlebitis, variously estimated as occurring in from 56 to 25 per cent. of the cases. In epidemics in England and America the frequency was estimated at from 19 to 38 per cent. As regards the cause of the trouble the late Dr. J. W. Washbourne suggested that it was due to tinned food and want of fresh vegetables. But these led rather to scurvy and deficient coagulability of blood. Another suggestion was the wear and tear of marching. But an equal proportion of cases occurred in the cavalry and artillery. Dr. A. E. Wright found that the coagulability of the blood was increased during convalescence from typhoid fever. This, he thought, was due to an excess of lime salts from the exclusive milk diet. But in South Africa there was a notable lack of fresh milk. Probably all that could be said was that this sequela was due to bacterial invasion of the vein walls under conditions of lowered resistance. Embolism, although comparatively frequent in thrombosis associated with influenza and gout, was markedly absent in the thrombosis following typhoid fever. Bradycardia occurred in one case, but it might possibly have been due to an excess of digitalis. Tachycardia was a much more frequent and persistent trouble. As regards the alimentary system, hepatitis with enlargement of the liver without suppuration occurred in one case. There was jaundice in one case, associated with fatal pneumonia. Suppurative appendicitis closely followed enteric fever in one case. Probably it was due to an enteric ulcer in the appendix. Two cases of enteric fever immediately followed appendicitis. There was late perforation in one patient who had been on ordinary diet for a fortnight. A recent ulcer in the ileum was found to have given way. Two cases of parotitis occurred during convalescence. As regards dysentery, out of 13 cases occurring during the disease or convalescence, 6 proved fatal, while 6 patients who had dysentery before enteric fever all recovered. There were nine cases of joint affection, including six cases of arthralgia, two cases of arthritis with effusion and one case of purulent effusion.

H. L. BARNARD, at the Clinical Society of London, Feb. 13, 1903, contributed a paper on the Drainage of the Knee-joint in Acute Suppurative Arthritis, illustrated by nine cases. He commenced by considering various operative procedures which had been adopted from time to time, such as those of the late Mr. Walter Rivington and Mr. Walter Whitehead. Mr. Barnard pointed out that few cavities of the body were so difficult to drain as the knee-joint. The usual method by lateral anterior incisions drained only the anterior half of the joint. The anatomy of the knee-joint showed two capacious pouches behind which reached above the condyles posteriorly, where they were covered by the heads of the gastrocnemius. They were separated from one another by a complete septum formed by the crucial and other ligaments. The external pouch sent a bursal extension down the leg along the tendon of the popliteus. When the knee-joint was extended, these two pouches were shut off from the front of the joint by the tight coaptation of the femur and tibia. When distended with pus they ruptured into the depths of the

popliteal space, where the sepsis was liable to involve the vein. The abscess then tracked down the calf and up the thigh, making drainage of both tracks almost impossible. The pouches should be freely opened by two-inch incisions in the line of the leg made by cutting on the condyles where they could be felt projecting on either side of the popliteal space when the leg was fully extended. In order not to wound nerves, when the skin had been divided a blunt instrument should be used to scrape down to the capsule, which might then be freely divided with the knife. The knife was then flexed to relax the structures and tubes were inserted on each side. In eight of the nine cases treated by this method, the temperature fell to normal in from 36 hours to a week. Massage (downward in front and upward behind) greatly assisted the evacuation of pus from the deep pockets. The nine cases given in the paper were consecutive. The four traumatic cases gave the best results. Two had good movement, one had some movement, and one had fibrous ankylosis. The five cases of auto-infection were less satisfactory; two were amputated, one for feeble repair and persistent sinuses, in an old woman aged sixty-five years, and the other for a tuberculous cavity in the end of the femur infected with erysipelas. Two cases apparently due to leucorrhea were most unsatisfactory. It was claimed that the massage of posterior drainage would cope most successfully with the immediate dangers of sepsis. The final condition of the joint depended rather on the cause of the suppuration. Subacute cases of suppurative arthritis of the knee due to auto-infection should be treated by the usual lateral patellar incisions and irrigations.

WYATT WINGRAVE, at the meeting of the Otological Society of the United Kingdom, held Feb. 2, read a report upon the Microscopical Examination of the Discharge in 100 Cases of Middle-Ear Suppuration, with an analysis of the results, having special reference to the presence of tubercle and "acid-fast" bacilli. He arrived at the following conclusions: (1) That acid- and alcohol-fast bacilli were demonstrable in a large proportion of chronic purulent ear discharges; (2) that in 17 cases they were presumably tubercle bacilli, in so far that they conformed to the recognized morphological and staining characters and were for the most part associated with trustworthy clinical evidence of tuberculosis; (3) that in seven (pseudo-tubercle bacilli) cases, while conforming to a greater or less degree to the staining requirements, they were morphologically unlike tubercle bacilli, yet five of them had either a family or personal history of phthisis; (4) that success in their demonstration in a great measure depended upon the methods of collecting and staining, together with perseverance in search, and (5) that in the peculiar selective action of the squames—a property specially attributed to certain bacilli, they had a possible source of error in diagnosis and an explanation of the peculiar affinity of other bacilli for fuchsin.

SOCIETY PROCEEDINGS.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, held March 3, 1903.

The President, Pearce Bailey, M.D., in the Chair.

Tabes Associated with Hemiplegia.—Dr. Joseph Collins presented a man, forty-two years of age, a bartender by occupation. When twenty-four years old he had had a chancre, for which treatment was given. A year later an iritis developed, and disappeared after two months' treatment. There was nothing further

until eight years ago, when he was seized with an attack of vertigo, which was associated with an aphasia lasting several days. There was no paralysis. Four years later there was a similar attack associated with vomiting. Last August the man fell in an attack in which he was only partially unconscious. Examination showed a right-sided hemiplegia, and this had continued ever since. On coming to hospital, there was found in addition a very marked atrophy of the right shoulder, and an absence of both knee-jerks. The pupils were small and regular, and reacted to accommodation, but not to light. There were incontinence of urine and manifest ataxia. The case was presented as one of tabes, the latter probably antedating the attack of thrombosis from which the hemiplegia originated. Coincident with the attack of cerebral thrombosis there must have been an obliteration of one of the cornual branches of the anterior spinal artery. In reality, this case presented three conditions: tabes, cerebral thrombosis and a destructive poliomyelitis of very limited extent. Tabes and hemiplegia were rarely associated.

Dr. J. Ramsey Hunt said that he had examined this case in the City Hospital. He had been doubtful about its being an anterior horn disease, and inclined to the opinion that there was a plexus lesion.

Dr. M. G. Schlapp said that in some of these cases of hemiplegia certain groups of muscles were markedly atrophied. The electrical examination should decide whether the case was of central or peripheral origin.

Dr. J. Fraenkel said that in only a few of the cases of tabes with hemiplegia had the knee-jerk returned, and this had only been temporary.

Dr. C. L. Dana said that he had had a short time ago under observation a man with tabes whom he had seen the very day of the occurrence of the stroke. There had not been any return of the knee-jerk, and he thought this could only occur in the early stage.

Dr. Collins said that there had been no suspicion of the existence of tabes before he had examined this man, and he had been deeply interested in the presence of the marked muscular atrophy.

Major Hysteria (?).—Dr. Collins then presented a woman, forty-four years of age, a cook by occupation. There was no history of alcoholism or of venereal disease. The present trouble began four years ago, with an involuntary twitching of the hands, and a loss of sensation in the hands and arms. This loss of sensation had gradually spread over the entire body. She had no pain, but felt tired and walked with difficulty. The gait was not strictly ataxic, but was rather shuffling and choreic. There was a peculiar condition of the left lower extremity, the lower third being shrunken without any hardening or thickening of the skin. Examination showed universal analgesia and more or less thermal anesthesia and analgesia. The knee-jerks and ankle-jerks were exaggerated. There was slight disturbance of speech, but not of intellection. She presented none of the ordinary stigmata of hysteria, and the color fields were of normal size. The woman had not improved under hospital treatment. According to the history her father and sister were similarly affected, but the former lived to be over seventy years old. The case was presented without a positive diagnosis, because it did not seem to him to correspond either to hysteria, syringomyelia or Huntingdon's chorea.

Dr. Schlapp was of the opinion that the case was one of hysteria, because the condition did not correspond to any known pathological lesion. The condition of the leg might have been brought about by a self-inflicted trauma. Two years ago he had presented to the society a case of supposed atypical zoster, but

subsequent investigation showed that the patient had produced the condition herself by means of carbolic acid.

Dr. R. H. Cunningham said he was reminded of a number of cases that he had had in a family in Richmond, Va., in 1893. Choreic symptoms developed between the ages of fifteen and thirty in the father, two sons and two daughters. One of the daughters had hemianesthesia. He would look upon the case just presented as one of adult chorea.

Dr. Collins said that he had been inclined to look upon the case as one of hysteria, yet this diagnosis presented many difficulties. After having observed her carefully for several months, he was still more inclined to the diagnosis of major hysteria.

Dr. Pearce Bailey said that he thought the ataxic gait was due to the anesthesia, and that the case was one of major hysteria. With regard to the other case, there seemed to be no doubt that the atrophy of the shoulder was distinct from the tabes. A fall on the point of the shoulder was quite frequently the cause of a paralysis with just such an atrophy.

Spinal Tumor.—Dr. M. G. Schlapp presented a man, forty-four years of age, with a good previous history. About two years ago a peculiar twitching had been noticed in the muscles over the right shoulder, and about two months later he had begun to suffer pain at the root of the neck, and extending into the trapezius muscle. After a time the right arm became weak, and subsequently the left side. This weakness was found to correspond to the muscles supplied by the anterior and posterior thoracic nerves on both sides. There was the Babinski symptom on both sides. There were analgesia and diminished temperature sense on the left side. The diagnosis made was an extramedullary tumor involving the fifth and sixth cervical roots of the spinal cord, pressing upon the pyramidal tracts and on Gowers' tracts, diminishing the pain sense and temperature sense. The tumor lay on the right side, and probably involved the motor roots on the other side. He thought an intramedullary tumor could be excluded. The man was to be operated on next week.

Dr. Pearce Bailey said he had seen this man last fall, and at that time there was no sensory disturbance, and the pain dated back two years, but with intermissions. He had formed the opinion then that there was a degenerative lesion rather than a tumor.

Cerebellar Tumor.—Dr. J. Ramsey Hunt reported a case of cerebellar tumor with degenerations of the posterior columns. The subject of this report was a man of forty-six, who had been admitted to Bellevue Hospital in July, 1902, with typical symptoms of cerebellar tumor, although the tumor could not be localized. The cerebellar symptoms had begun three months before, and he was under observation for three months. During these six months there was a progressive diminution of the knee-jerks and Achilles-jerks on both sides. It was thought to be due to degenerations in the posterior columns of the cord, as had been described in connection with tumors in the posterior fossa of the skull. There was very marked choked disk, and the man's mental condition became one of apathy and somnolence. At the autopsy two small tumors were found, one springing from the dura mater in the median line, and encroaching somewhat upon the right frontal lobe, and the other tumor in the left cerebellar hemisphere. Both tumors were medium-sized round-cell sarcomata. The spinal cord presented evidence of greatly increased intracranial pressure. Specimens of the spinal cord, both transverse and longitudinal, were prepared, and they apparently showed degenerations of the posterior columns, such as had been described in connection with

tumor. The higher levels of the cord were most affected. Lissauer's column was spared, as was the rule. The fibers in Clark's columns were also usually spared. These degenerations arose from the entrance of the posterior roots into the spinal cord. It was an anatomical fact, that where the posterior roots perforated the dura mater obliquely there was a constriction, and that here the sheath of Schwann was lost. At the same time there was a constriction of the myelin substance, and some of the fibers were deprived entirely of this substance. The speaker then briefly discussed the mechanical and toxic theories, and said that he presented the case as one favoring the mechanical theory.

Dr. L. Pierce Clark reported the following case: The subject was a man of thirty, who had had both gonorrhea and syphilis, and who used alcohol and tobacco to excess. The present illness began in October, 1901, with headache in the right occipital region. After a time he began to vomit in the morning, and the right side became weak. Iodide of mercury had been given without benefit. On examination, there was choked disk in the right eye; the sixth nerve was bilaterally weak; the muscles of the right leg were stiff and painful; the head was held stiffly and bent slightly to the right side; all the deep reflexes were exaggerated, particularly on the right side; there was double Babinski; the gait was characteristically cerebellar. A diagnosis was made of a syphilitic tumor in the middle lobe of the cerebellum involving the peduncle. On admission to the Presbyterian Hospital in January, 1903, for operation, an X-ray examination showed the tumor. The man died rather suddenly, and the autopsy disclosed a tumor of the cerebellum. Between it and the fourth ventricle was a large cyst filled with slightly turbid serum. Apparently the growth was a syphilitic gumma that had undergone syphilitic and calcareous degeneration.

Spindle-cell Sarcoma of the Dura Cerebelli.—Dr. B. Onuf reported this case and presented a specimen. The subject of the report had been first seen on May 2, 1902, and at that time complained of a shooting pain in the left ear, and in the teeth, and of attacks of dizziness. There was only slight perception of light; the gait was staggering, there were no marked changes in sensation or in the reflexes; there was typical choked disk. A diagnosis of cerebellar tumor was made. Subsequently the man developed slight paresis of the left facial nerve with fibrillary twitchings of the muscles in this region, and the hearing on the left side became greatly impaired. In walking, the man deviated to the right. He died in December, and at the autopsy a tumor was found at the base of the left cerebellar hemisphere. It was a spindle-cell sarcoma. This could have been enucleated had it been in a more accessible situation.

Dr. Schlapp said that about a year ago he had presented to the New York Pathological Society a case similar to the one presented this evening by Dr. Hunt, showing degeneration of the spinal cord. The specimens from his case had been counterstained with acid rubin, and the sheath of Schwann was stained. In all of the cases the degeneration extended to this sheath, especially in the cranial nerves, the trigeminus, the glossopharyngeus, and the vagus nerves. He had expressed the opinion at that time that the sheath of Schwann might have some protective influence. He did not think the case tended to disprove the toxic theory. There were no sensory symptoms in the beginning, and probably the degeneration was at first confined to the fibers passing from the posterior columns into the gray matter. The poison appeared to be selective in its action, involving only the reflex fibers.

The degeneration was particularly marked in the sensory nerves.

Dr. W. M. Leszynsky said that he had been interested in the fact that respiratory failure had preceded cardiac failure in Dr. Clark's case. One of his own patients had died upon the operating table just as a cerebellar abscess was reached. The heart continued to beat for eight or ten minutes after the failure of respiration. If degeneration existed in the posterior columns in the upper portions it must act chiefly on the third or fourth lumbar segments in order to produce loss of knee-jerks; how, then, would one explain those cases in which the knee-jerk was absent for a time, then became well marked, and was alternately present and absent?

Muscle Tonus and Tendon Phenomena; Their Relationship and Interpretation.—Drs. J. Fraenkel and Joseph Collins presented this paper, which was read by Dr. Fraenkel. It was based upon tonometric examinations of 230 patients. The authors stated that at the present day the view most generally held was that the tendon phenomena were expressions of muscle tonus. General clinical experience showed a definite relationship between tendon phenomena and the tonicity of muscles. Hypertonia, next to exaggeration of the tendon jerks, was a symptom of disease of the pyramidal tracts. The tonometer used in this investigation was the invention of the house physician of the Montefiore Hospital. A total of 554 registrations had been made. The 230 cases were distributed as follows: Apparently healthy, 32; cases of tabes, 25; of organic disease of the nervous system, 33; functional disease of the nervous system, 40; pulmonary disease, 70; heart disease, 12, and various other chronic affections, 18 cases. There were 71 registrations classed as hypertonia. It was found to be frequently, although not always, associated with exaggerated Achilles reflexes. Hypotonia was found to be frequently associated with loss or diminution of the tendon phenomena. There was a comparatively small number of neurogenic hypotonias in proportion to the cases of general hypotonia. Neurogenic hypotonia and absence of diminution of the tendon reflex were found frequently associated. Neurogenic hypotonia with exaggeration of the tendon reflexes was present in nine per cent. It was concluded that hypotonia produced by damage of the ascending tracts of the spinal cord was accompanied by loss or absence of the tendon phenomena in every instance. In the cases of hypertonia absent or diminished reflexes were present in six per cent. of the registrations. In the cerebral group there was found a larger percentage of hypotonias than of hypertonias. In the spinal group 100 per cent. gave exaggerated tendon reflex, and 95 per cent. showed hypertonia. It had been learned that whenever the neurogenic tone was markedly increased or decreased the tendon-jerks were increased or decreased correspondingly. The authors concluded that disease of the posterior tracts caused hypotonia, and disease of the pyramidal tracts caused hypertonia. There was a large group of cases giving normal tonicity and normal tendon phenomena.

Dr. G. L. Walton, of Boston, said that in the exhaustive discussion on reflexes and tonus opened by Crocq in 1901, the reader had reviewed the clinical and experimental evidence which tended to show that the reflexes generally corresponded to the tonicity. The exceptions to this rule he explained as illustrations of the fact that the centers for tonicity (at the cortex) and those for the deep reflexes (in the basilar region) were separate. This explanation was not directly discussed, though the limitation of these functions to the regions indicated was seriously questioned. The readers to-night had reinforced in a most convincing way

the results of Crocq, though their explanation of the exceptional cases differed from his materially. The question was too complicated to be discussed in its entirety, especially in the absence of exact knowledge as to the seat of either the tonus or the reflexes, but such work as had been reported this evening furnished one of the definite steps by which one might gradually mount to a knowledge of this complex subject. We had been so long imbued with the notion that in man, as in the frog, the spinal cord was the centre for reflexes and tonus, that it was difficult to transfer our study of these functions to the brain. Even in case of disturbed reflex in cerebral disease we were still apt to think of the function of the brain as limited to the withdrawal, or the increase of influence upon the cord, through the pyramidal tract. For a long time the hypotonicity and loss of reflex sometimes found at the onset of cerebral hemorrhage was attributed to the shock conveyed to the cord. At the discussion already alluded to the disputants, while recognizing the importance of the cerebral influence, were by no means in accord with Crocq in limiting the reflex centers and the centers of tonicity to the brain. Dr. Walton said he had several times taken occasion to suggest that, instead of speaking of lower centers controlled, or inhibited, by higher centers, inhibited perhaps in their turn by still higher centers, we should recognize the combined action of all centers, cortical, basal and spinal, allotting to certain regions a predominating reflex function, liable to transference to a lower level on gradual withdrawal of upper level influence. According to this view each reflex movement might be regarded as a resultant of the activity of various loops of different lengths, connected with each other both laterally and vertically. The more he had observed the reflexes in cerebral disease the more he was inclined to accord the cortex the predominant rôle in the deep, as well as the superficial reflexes, and in the tonus. It was difficult, for example, to explain on any other basis the absence of deep and superficial reflexes in the following case: The patient was unconscious and hemiplegic, with a temperature of 105° F., and all reflexes absent up to the time of his death. The Kernig symptom was present, showing, probably, comparative hypertonicity of the hamstrings, but the extremities were otherwise obviously hypotonic. Autopsy showed pneumococcus meningitis of the convexity with encephalitic invasion of the cortex. In other cases of meningitis the reflexes were frequently preserved, but in one case of meningitis coming under his observation, in which both brain and cord were affected, during the stage of rigidity and obvious hypertonicity the reflexes were absent, but reappeared as relaxation set in, first on the side first relaxed. One must evidently look farther than to separation of the centers to explain such conflicting phenomena; in fact, different cases might require different explanations. Possibly it was partly a question of comparative tonicity. In the last case, for example, the hamstrings might have possessed hypertonicity so far in excess of the hypertonicity of the quadriceps femoris as to "snub" the knee-jerk. In long standing infantile cerebral hemiplegia with contracture the deep reflexes were often absent, though hypertonicity was apparent. Doubtless in some of these cases the contracture was in such position as to put the tendons on too great or too little stretch, thus mechanically preventing the reflex. The combination of exaggerated reflexes with hypotonicity was sometimes seen in Erb's syphilis of the cord, especially in the early stages. In a recent conversation with Dr. Courtney he had suggested that the affection about the fibers of the pyramidal tract was sufficient to impede the transmission of

voluntary impulse and of tonicity from the cortex, but the reflex stimulus passed the more rapidly, as in neurasthenia, uninhibited by the volitional mechanism. Though not sure that he had thoroughly grasped the explanation of the readers on this point, Dr. Walton felt that they had proceeded along logical lines.

Dr. C. L. Dana thought the authors had established quite clearly the relations of hypertonia to the reflexes, and had given to the neurological world tangible working data. He had not fully understood the explanation of the effect of the brain on hypotonus and hypertonus. Personally, he made use of a working hypothesis which fitted in very well with the explanation given in this paper. In all the sudden insults to the brain occasioned by hemorrhages producing profound hemiplegia there was always absence of the deep reflexes on the paralyzed side, and with it no doubt hypotonia; whereas there was not this loss of reflexes on the non-paralyzed side. After a time this absence gave place to an increase of reflex. If, however, the hemorrhages were more posterior and involved the sensory sphere, there was more definite and more prolonged absence of reflexes.

Dr. B. Onuf referred to a case in which a tumor of the hip and shoulder centers was diagnosed, and the tumor removed, with the result that a very marked hypotonia developed in the paralyzed extremity after the operation, and was present even two months afterward.

Dr. Collins said that Dr. Fraenkel was satisfied with having established the relationship between tonus and reflexes, and they were both particularly gratified with Dr. Dana's statement that in his cases of cerebral hemiplegia he had observed that the farther posteriorly the lesion extended, either into the sensory cortex or the sensory representation of the capsule, so in proportion was the existence of hypertonia or the lateness with which it appeared. This clinical experience fortified very greatly the position taken in the paper.

Dr. Fraenkel said that he, too, had been delighted at the confirmation of their position by the very large clinical experience of Dr. Dana. If their observations were correct they should be of value in connection with diagnosis of pure lesions of the pyramidal tract associated with hypertonia and of the posterior tract with hypotonia.

HARVARD MEDICAL SOCIETY OF NEW YORK CITY.

Stated Meeting, held Saturday, January 24, 1903.

Leucocytosis.—Dr. Carleton B. Flint found by careful examination of a series of cases under treatment at a city dispensary for various minor surgical conditions that out of fifty cases in which leucocytosis was found, five were under ten years of age, fourteen were between ten and twenty and thirty-one were above twenty years of age. Other things being equal, the younger the patient the greater the tendency to an increased number of the leucocytes, during an infectious process and the higher the leucocytosis itself. A child and an adult admitted with the same surgical condition would differ in the leucocytosis, almost inevitably the child having the higher count. The region affected by the infectious process seemed not to make any material difference in the leucocytosis occasioned. The number of glands involved did, however, seem to make a difference in the number of leucocytes found. Most of the patients had enlarged glands. Where the leucocytosis was high a number of glands were almost sure to be found enlarged and somewhat tender. Some cases, occurred, however, in which in

spite of the presence of a considerable leucocytosis no glands seemed to be involved. Where glands were involved and not tender, the numbers affected seemed to make no difference, for there was an average leucocytosis of about the same amount. In about ten of the cases only a little pus was present, in nineteen about a dram was found, in twenty-two there was an ounce or more of pus. The average leucocytosis was about the same, no matter what the quantity of pus present. It was evidently the quality of the microbic infection, rather than the amount of destruction of leucocytes to make pus that caused the leucocytosis. In seven cases there was no pus present, yet there was a distinct leucocytosis. In four cases of cellulitis, the leucocytosis ranged from 20 to 30,000, yet no pus was found and it seems evident that the leucocytosis is a sign of infection rather than of pus formation.

Meat Infections.—Three of the cases in which there was leucocytosis without pus formation, were due to meat infections. That is they occurred in butchers, cooks and waiters in whom the handling of meat gives occasion for infection by micro-organisms that grow parasitically in slaughtered animals. The affections produced were erysipeloid in character and were really examples of the so-called Rosenbach's disease. There was always a leucocytosis in these cases, though the leucocyte count was low, but no pus was found.

Duration of Leucocytosis.—The limit assumed beyond which the patient was presumed to have a leucocytosis was 8,000. Whenever patient's blood examination showed a leucocyte count below this figure, the leucocytosis was considered to be at an end. In 29 cases the leucocytosis fell below this figure within a week. The average leucocyte count in these cases of such short duration was 12,000. Twelve cases dropped below 8,000 in leucocyte count and therefore became normal during the second week of observation. The average leucocyte count in these cases was 15,000. Nine cases became normal only after the end of the second week and in these the leucocyte count as a rule was very high at the beginning. In six cases the leucocytosis continued very high, that is nearly 30,000 for over three days. In children that are under the age of ten years, the average duration of a leucocytosis was about ten days. In adults between twenty and thirty years of age, the average duration was sixty days. In older patients the leucocytosis lasted less than this as a rule. Children seem to react as regards leucocytosis much more rapidly and more markedly to the infectious agents present and it is longer before there is a definite return to the normal. As patients are older, the duration of the leucocytosis becomes constantly less. There are exceptions to this rule dependent somewhat on the severity of the affection, but in any case, adults seem to react less readily in the production of the leucocytosis and return to the normal much sooner than younger children.

Packing of Abscesses.—Dr. Edward Foote called attention to a remark of Dr. Flint's with regard to an increase of leucocytosis when abscesses were packed so as to prevent free drainage of purulent secretion. The expression, "packing an abscess" is a bad one and the expression, drainage of an abscess, should be substituted for it. Undoubtedly some physicians are led to put more gauze into abscess cavities than is necessary in order to secure drainage as the result of having the idea expressed by packing an abscess before their minds. Dr. Foote asked whether it can be considered patients are doing well after certain surgical procedures if there is a drop in the leucocyte count.

In answer to this question Dr. Flint said that leucocytosis means not pus, but infection. Its presence is

an index of resistive vitality. When the leucocytosis drops there is no longer any spreading of the infection, or absorption to any extent of infectious material, unless as sometimes happens there has been a complete change for the worse and an entire loss of resistive vitality.

Glandular Enlargements and Streptococcus Infections.—Dr. Charles Schramm said that it is interesting to note the highest leucocyte counts were found when granular enlargements were frequent and a streptococcus infection at work. There is material in this series of studies for the investigation of the question as to whether, as has been stated by some physiologists, the leucocytes are due to activity on the part of the lymphatic glands or as they are more modernly called, the lymphatic nodes.

Pelvic Abscess and Leucocytosis.—Dr. Henry Coe said that pelvic abscess may now practically be considered as coming under the designation of minor surgery. It is not an unusual thing to find in cases of pelvic abscess that the leucocytosis so commonly present drops immediately after the evacuation of the abscess. In a case recently seen at the New York Memorial Hospital, the patient on admission had a leucocyte count of 50,000. The pulse was 140, the temperature 103° F. and there was an obscure history that looked somewhat like criminal abortion. A careful vaginal examination showed that there was a pelvic abscess of considerable size which was already beginning to point in the posterior vaginal fornix. It was opened and a pint of infected pus with broken down blood material was removed, evidently due to an infected hematocoele. The leucocytosis dropped at once to 20,000. The abscess cavity was packed and the packing seems to have interfered with drainage for there was an almost immediate rise both in the temperature and the number of leucocytes once more. As soon as the packing was removed the temperature and leucocytosis dropped again. In Dr. Coe's experience, it is a rare thing to have a patient suffering from a gynecological condition come under treatment with a leucocytosis of from twelve to fifteen thousand without finding pus present in the pelvis.

Leucocytosis and Vital Resistance.—Dr. Daniels said that according to Dr. Flint's observations, leucocytosis seems to be highest when resistance is least. In children it is easy to produce a rise in the leucocyte count and it takes a considerable period before there is a reaction to normal. Dr. Daniels called attention to the fact that there is a leucocytosis reported as constantly present in the later stage of labor. The leucocyte count is increased if labor is prolonged. In these cases, however, there is no pus present and no germs are active. It would seem then that a reduction in vitality itself or the strain of the exhausting process of labor may without further cause suffice to produce an increase in the number of leucocytes.

Susceptibility and Resistive Vitality.—Dr. George Brewer said that the high leucocytosis in children, instead of being an index of lower resistive vitality is really a sign of the promptness with which nature reacts for the protection of the child against the entrance of infectious organisms. It is a common experience that children have as a rule excellent resistive vitality. They are especially susceptible to disease, but this has nothing to do with their resistance to it. It is well known that many of the children's diseases, so called, run a much more severe course when they occur in adults than they do even in very young children.

Dr. Foote said that children are certainly not lacking in resistance to disease and if, as embryologists teach, death begins from the moment when the cell begins its

process of division in the embryo until the final term of existence, it is to be expected that children should be more vitally resistive than older persons. As a matter of fact it is generally conceded by surgeons that children stand surgical intervention of various kinds much better than adults and that their resistive vitality will prove surprising in its reactionary resources even in apparently delicate subjects and what look like hopeless circumstances.

Normal Number of Leucocytes.—Dr. Spooner said that one of the difficulties with regard to observations on leucocytosis is the assumption of the normal number of leucocytes. Dr. Cabot of Boston declares that under normal conditions the number of leucocytes present, may be from 3,000 to 12,000. The normal differs in different individuals. A man who has normally only slightly more than 3,000 leucocytes must be considered to have a distinct leucocytosis when there are 6,000 present. On the other hand when the individual number is 6,000 or slightly more, then a true leucocytosis is present only when there are 10,000 to 12,000 white blood cells to the cubic millimeter.

Removal of Lymph Glands.—Dr. Oastler said that the question of leucocytosis would seem to throw some light on the serious problem as to whether lymph glands should be removed in order to limit further constitutional infection. When there is extensive suppuration in the hand and enlargement of the lymph nodes in the axilla, some surgeons consider that the axilla should always be cleaned out. Other surgeons deny the advisability of this because it does very little, if any good, during the present infection and if another infection should occur, it removes the gland sieves which act as protectors of the system against the entrance of infectious materials, from the limbs into the trunk. According to Dr. Flint's observation, it would seem to be almost a matter of indifference whether the lymph glands are removed or not. As their removal is always a serious operation, this would seem distinctly to discourage such surgical intervention.

In closing the discussion, Dr. Flint said that some of his cases, in which there was no pus, but a very acute infection, had the highest leucocytosis. The leucocyte count cannot then be used as an index of the absence or presence of pus with any degree of certainty.

Conservative Surgery and Its Dangers in Gynecology.—Dr. Henry Coe said that he considers it is time to begin to admonish conservative surgeons in gynecology to be conservative in their conservative methods. He has seen some very unfavorable results after so-called conservative surgery and considers that the chances of future difficulties should be well weighed before the surgeon decides on preserving tissues that may already be either infected or in a very low stage of resistive vitality. It is well understood among gynecologists that part of the ovary is allowed to remain rather for the sake of the sexual life, than because of the possibility of pregnancy, the presence of even a small amount of ovarian tissue secures the woman from many very annoying symptoms. Gynecologists are very prone to make much of the good results of conservative work, but fail to report the unfavorable consequences. Dr. Coe considers that certain of the unfavorable cases are extremely instructive. In a case recently under his observation for the second time he had to remove the right tube and ovary and the appendix two years ago. The left tube and ovary, apparently in reasonably healthy condition were allowed to remain. Some weeks ago the patient returned, having suffered from severe pain, gradually growing worse, practically ever since her convalescence from the last operation. Now the pain was all referred to the left side of the pelvis and

on examination a cystic mass could be felt in the vagina on the left side. At operation this proved to be an inflammatory condition of the left ovary, which had to be removed. Perhaps there has been in the meantime a secondary infection. However, this woman would have saved two years of pain, and the necessity for a second operation, if the total ablation of her tubes and ovaries had been done at the first operation. In another case recently under observation the right ovary had been removed and as there was tilting backward of the uterus, a Kelly suspension was done. The long adhesions that are expected to form in these cases were found to be present and were so situated as to be very favorable for the development of occlusion of the intestine or disturbance of its lumen by catching knuckles on it. In the left tube and ovary a blooming pyosalpinx was found. This was undoubtedly due to secondary infection, that is, infection since the previous operation, but it must be borne in mind that where women have once become infected with gonorrhea, it is not at all improbable that subsequent infection will also take place, and this possibility must be borne in mind and must form one motive in guiding the surgeon as to the extent to which conservatism may be practised.

Formation of Adhesions.—In a third case under Dr. Coe's observation, after an operation for the removal of portions of the left ovary most extensive adhesions were found. These undoubtedly prevented anything like the proper functioning of the ovary and must have been besides a source of great pain and discomfort. Dr. Coe has seen at least a dozen cases in which conservative surgery has been followed by atrophy of all the ovarian tissue left and consequently with total failure of the ovary to prevent the sexual symptoms and premature menopause for which the portion of ovarian tissue was left. Gynecologists insist on the possibility of pregnancy in these cases. But this is a very rare occurrence and comes more by good fortune than good judgment. There are perhaps half a dozen cases of pregnancy altogether in the literature after conservative surgery, involving portions of both ovaries.

Papilloma of Bladder.—Dr. Daniels said that a man of about forty years came to him a year ago last October with a story of having passed a few drops of blood from his penis. He seemed to be in perfectly good health, more anxious than ill and, as the incident did not occur again, for a considerable period, he ceased to worry. Some months ago he came back with a story of having passed blood again and a cystoscopic examination, showed the presence of a papillomatous growth of the bladder. Dr. Daniels asked if he should advise his patient to have the growth removed because of the danger of malignant degeneration, or whether he should wait until there were some surer signs of cancer about the case, since it is well-known that papillomata may exist even for a year without producing serious symptoms.

Uncertainty of Vesical Papillomata.—Dr. Coley said in answer to Dr. Daniels' question that if papillomata of the bladder are cancerous they are usually very malignant and run a rather rapid course. In one case that has been under observation, a papilloma of the bladder was removed by a suprapubic operation and was followed by the development of epithelioma in the scar of the abdominal wall. Dr. Brewer said that he has known a case of papilloma of the bladder which has remained innocent for ten years. Keyes of New York has reported a case that has not become malignant, though it has been present for eighteen years. As a rule, if there are long villi, and this can be judged at the cystoscopic examination, the tumor is innocent. Of course, cancerous degeneration may take place at any

time so that the advice to give a patient in any one case is extremely difficult to decide.

Sessile and Pedunculated Tumors.—Dr. Ramon Guiteras said that tumors with a broad base, the so-called sessile tumors of the bladder are much more apt to be malignant, or to degenerate malignantly, than are those that have a pedicle. Dr. Daniels said in answer to a question that the tumor in his case seemed to have a rather broad base.

Dr. Dawbarn said the age of the patient rather than the kind of tumor is important. If the patient is about forty-five years old or older, then it is usually malignant, since this is the age when neoplastic formations in the body are apt to get beyond the control of the vital forces of the organism. If the tumors develop in younger patients they are usually innocent and remain so, though of course it must not be forgotten that malignant tumors sometimes occur in young persons, and when they do they run an extremely rapid course.

Dr. Coley said that the younger the patient the less chance by operation if malignancy is present. Undoubtedly it is true that cancer is occurring at earlier years than used to be thought and in any particular case, the age of the patient can scarcely be considered as a diagnostic factor excluding the presence of cancer.

Some Tumors Comparatively Innocuous.—Dr. Follen Cabot said that he has had under observation a patient who is in his sixtieth year and who is conscious of having had a papillomatous tumor of his bladder for 23 years. The development of cachexia and other signs seemed to point to malignant degeneration and the tumor was removed. It recurred, however, and the recurrence was complicated by tremendous hemorrhages. In a patient of thirty years of age who had suffered for some thirteen months from papillomatous growth of the bladder and in whom the principal symptoms were violent hemorrhages, the introduction of adrenalin, in the strength of 1-5,000 controlled the bleeding better than any other method of treatment.

Frequent Palliative Operation.—Dr. Spooner gave some details of a case that had been under observation in the Massachusetts General Hospital. This had remained non-malignant for 25 years. When first seen the man was already over fifty and he turned up at the hospital every two or three years to have portions of the tumor scraped out, because it was interfering with urination. Notwithstanding this frequent irritation, the patient has lived for many years and has enjoyed comparatively good health.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON GENITO-URINARY SURGERY.

Stated Meeting, held March 18, 1903.

Dr. John Van der Poel, in the Chair.

A Self-Retaining Double Retractor, for Suprapubic Cystotomy.—Dr. John Van der Poel presented this instrument, which was a modification of that of Dr. Legue of Paris, used in abdominal operations. The blades of the present instrument, $2\frac{1}{2}$ cm. in depth, although they acted well in a case of suprapubic cystotomy for stone, where the abdominal walls were thin, and where the instrument served its purpose well, were found too short in a case where the walls were thick, and considerable fat was present. As they were interchangeable, however, it was an easy matter to substitute others of greater depth, or of any depth, sufficient to engage the bladder walls, and hold them apart, securing

a good field of vision in the interior of that organ. The length of the blades was 4 cm.

Cystectomy for Extrophy of the Bladder.—Dr. Frank Hartley read this paper. (Will be published in a subsequent issue of MEDICAL NEWS.)

Dr. J. F. Erdmann said that he was particularly interested in the subject of removal of the bladder in cases of extrophy. A year and a half ago he had a case of extrophy in a child six months old, in which he did the Maydl operation. At that time he met with no difficulty in separating the bladder, as was experienced by Dr. Hartley. He dissected out the bladder, first having introduced probes in the orifices of the ureters, meeting with absolutely no difficulty in the operation. He trimmed away all of the bladder except that region in which the orifices of the ureters were found. This area was about the size of a ten-cent piece. This was inserted into the sigmoid after the manner of Maydl. The wound was sewed up tightly; patient reacted perfectly after the operation. For the first two days the rectum was catheterized q. 4 h., an ample quantity of urine being removed at each catheterization. No evidence of kidney or skin infection being present up to the time of the child's death, which occurred on the sixth or seventh day from a bilobar pneumonia. There were no evidences of any secondary infection at the site of the wound or kidneys. During the first two days the patient's rectum was catheterized every four hours, and the kidneys were found to be working properly. After this time the child would expel its urinary collection in the rectum voluntarily.

Cystectomy for Tuberculosis of the Bladder.—Dr. Frank Hartley read this paper. He believed that, in cases of extrophy of the bladder, almost all plastic operations for their relief, or attempts to form a new bladder with continence almost always failed. He had never had but one continent bladder which held the urine for $1\frac{3}{4}$ to two hours. The cases so far reported had not been thoroughly substantiated, one only having been seen years after operation by Tietze. For this reason he thought it wise to attempt some other method, unless the local deformity was slight and gave promise of results. With a mortality of 15 per cent. he thought the operation as performed by Maydl, or some modification of it (Pozzi's), the best so far proposed. The Frank operation has not been tried enough in man to thoroughly substantiate its value, although on dogs it had worked nicely. As a last resort one could attempt a uretero-urethral implantation in the male (Sonnenburg), or a ureterovaginal in the female (Pawlet). It is interesting to note also that in operations for extrophy by the Maydl method $8\frac{1}{2}$ of the 15 per cent. mortality was due to shock and $6\frac{1}{2}$ per cent. to infection of the ureters and kidney. The question as to how much ureteritis existed before operation in these cases has never been settled. He said also that cystectomy for tuberculosis of the bladder was extremely rare, especially for cases such as the one presented, where the ureteral orifices were not involved in ulceration, and the tuberculous involvement of the bladder was in all probability primary in the bladder.

Report of a Case of Mucous Cyst of the Anterior Wall of the Bladder, Simulating Stone, or Pedunculated Tumor.—Dr. Willy Meyer presented this patient, a man, forty-one years old, married, the father of four children. In early youth he masturbated for quite a while. Later he suffered from spermatorrhea. Dr. Meyer saw him in March, 1892, when the patient stated that he had, for four months, trouble with normal urination, having had pain toward its end, some tenesmus and frequent irritation, and he noticed the stream was cut off, as in cases of stone. There was no bloody urine. The urine was clear. He passed water four

times during the day and two or three times at night. He generally experienced a sharp pain in the glans penis and, when urinating, the flow would stop, then continue, then stop, then continue, etc., until he was through. A large sound could be introduced which gave him some relief. In Philadelphia X-ray pictures were taken to learn if there was a stone in the ureter or bladder; nothing was found. It was interesting to note that the patient insisted that the taking of the X-ray picture gave him relief for a number of days. Both prostatic lobes seemed to be somewhat enlarged. The catheter would not pass into the bladder. The prism at the neck of the bladder revealed a transparent growth which appeared to be the size of a cherry. The blood vessels were enlarged over it, and a very pretty picture was shown. The growth was over the internal orifice, and was not entirely illuminated. The growth was round, smooth and sessile, covered by blood-vessels. On account of its being diaphanous it was diagnosed as a cyst. Inasmuch as Dr. Bangs had reported a hydatid of prostate he thought of that condition being present in the bladder. The patient suffered very much. He was sure that the growth was not a malignant one because of the picture. On March 11 he did a suprapubic cystotomy and found, on the anterior wall of the bladder, a tumor, which was transparent, oval in shape, and with its long diameter placed transversely. With the use of the Paquelin cautery he was able to shell the growth out completely and control the hemorrhage. Unfortunately he ruptured the cyst. The microscopical examination was made by Dr. Ware, and revealed a mucous cyst line by epithelium. The patient made a good recovery and is now well. He stated that these cysts of the bladder were very rare, although there have been some reported, and they were considered to present cystic degeneration of the mucous glands. One case had been reported in which the cyst filled the entire bladder, containing a number of quarts of fluid. This certainly was considered to be a very unique case. He said that dermoids and hydatids also were extremely rare in the bladder.

Suprapubic Cystotomy for Tuberculosis of the Bladder, Followed by Nephrectomy.—Dr. Willy Meyer reported this case. The patient came to him on account of frequent urination and purulent urine. He gave a tuberculous history. The tubercle bacilli were found. The bladder contained 15 or 20 c.c. of fluid. The cystoscope failed to tell whether the mouth of the ureter was healthy or not. He believed that, in the great majority of the cases, a cystoscopic examination would show whether the tuberculosis was descending or ascending. Personally he had never seen a case of ascending tuberculosis when there was an ulceration around the mouth of the ureter; if it was a descending tuberculosis he expected to find tuberculous ulceration about the mouth of the ureter. This was the rule almost without exception. He, therefore, wished to cystoscope the patient first to learn whether it was an ascending or descending infection, and to determine whether or not to do a nephrectomy. In these cases he always hesitated in opening the bladder unless it was absolutely deemed necessary. Of course, if the disease was far advanced one must do it. If there was a beginning tuberculosis, the removal of the kidney might suffice to create a secondary tuberculosis of the bladder. He opened the bladder and learned that both mouths of the ureters were absolutely healthy. Upon a most careful examination, care being taken not to infect the patient, he noticed a sudden gush of pus from one of the ureters. He found numerous small ulcerations, but not around the mouth of the ureter. He thought best to drain the other kidney and, there-

fore, he introduced a catheter into the opposite ureter, and left it in place for twenty-four hours; the urine from this kidney showed healthy urine. Ten days later he extirpated the diseased kidney, and an ascending typical tuberculosis was found. The patient made a good recovery and had improved very much in health since. An obstinate suprapubic fistula remained which he had been unable to close. The patient was much annoyed by this small sinus, but he hesitated to open the bladder to repair it.

Dr. A. V. Moschcowitz said that apropos of the case reported by Dr. Meyer he believed it would be of interest to mention a peculiar case which he had had occasion to see three months ago. The patient was a woman, twenty-eight years old. Her parents had died of tuberculosis, also one brother, while another brother was affected with pulmonary phthisis. She had complained for a year and a half of frequent micturition, at night getting up six or seven times and, during the day, urinating every half hour. Last October he saw the patient. She had purulent urine. Making a very careful examination he found the tubercle bacilli; this examination was repeated on various occasions, and the tubercle bacilli found each time. Cystoscopic examination showed the right ureter to be distinctly ulcerated, with two ulcerations at the mouth of the ureter. The physical examination showed an enlarged right kidney, freely movable. He kept the patient under observation for some time. She did not improve under any local treatment, and he felt justified in opening the right kidney. He exposed the right kidney and found it enlarged, with an adherent capsule, but nothing else. He bisected the kidney from one pole to the other and found nothing. Under these circumstances he did not feel justified in removing the kidney. The kidney was anchored and the patient placed in bed. Recovery was uneventful. Since then the ulcerations in the bladder healed completely, and the tubercle bacilli have also disappeared from the urine. The patient is perfectly well, urinating on an average only four times in twenty-four hours.

Suprapubic Cystotomy for Tumor of the Bladder, with Spinal Anesthesia.—Dr. Willy Meyer presented this patient, who had already been shown two years ago before this Section. The patient then was sixty-six years old and had symptoms of tumor, with repeated hematuria for four years previous. He first passed clear urine and then bloody. Upon the left side of the fundus, above and behind the left ureteral opening, there was noted a small tumor about the size of a hazelnut, which had a broad base, and small spurtings of blood was seen. Operation was performed March 9, 1901, under spinal anesthesia, because the man had a very pronounced bronchitis. One-third of a grain of cocaine was used with perfect result, so far as analgesia was concerned. There was no difficulty in shelling out the tumor, using the Paquelin cautery, and the bladder was inverted. After the bladder wound was closed with sutures, except a small opening, the bladder wall was inverted and the bladder anchored. The patient made a good recovery. The wound was water-tight. The tube was removed on the eighth day and, three or four days later, the wound was closed. This patient was shown by Dr. Meyer because, at that time, there was a suspicion of cancer entertained. The patient now was entirely well. He had no more hematuria, and was passing water four times during the day, and not at all during the night.

Dr. John Van der Poel had had a similar case, in a man, sixty-nine years old, who presented symptoms typical of a bladder tumor; *i.e.*, the hemorrhage, though practically constant at the time he was first seen, ex-

cepting after the bladder was washed out, when it was controlled for a short time, originally came on only at the end of micturition, (which was more frequent than normal, and bright red in character). A cystoscopic examination was made, and a well marked villous tumor easily seen at the mouth of the right ureter, apparently about the size of an English walnut, with its fimbriae movable, appearing as if they were floating in the fluid contained in the bladder. A photograph of the mass was subsequently taken, though not entirely satisfactory, on account of the fluid becoming turbid too rapidly. Suprapubic cystotomy was performed, the transverse incision being used, as a good field was desired, this incision allowing a better view of the interior of the bladder than the longitudinal one. Although the incision was a low one, one cm. above the symphysis pubis, the peritoneal cavity was opened, the fold of peritoneum (although the bladder contained 250 grams of fluid), reaching down to the symphysis. This was sutured, with no following complications. The tumor was removed with the Paquelin cautery without difficulty, but was extremely friable, and between the fingers had no resistance, feeling very much as one would suppose a jellyfish to be.

Pathological examination showed the mass to be a pure papilloma. The subsequent course was normal and a cystoscopic examination made three months after the operation showed absolutely nothing, excepting a slight mark at the previous seat of the pedicle (which had been not over an eighth of an inch in diameter). The transverse incision in the bladder wall had healed perfectly, and there was nothing but a slight scar to be seen in that region.

Suprapubic Cystotomy for Stone, with Spinal Anesthesia.—Dr. Willy Meyer presented a patient, sixty years old, who came under his care two years ago with symptoms of prostatic enlargement and stone, with the stone symptoms predominating. There was but little residual urine. He proposed to crush the stone, and the patient was operated upon in the hospital on March 10, 1901. Spinal anesthesia was obtained by tropacocaine. Shortly before this he had had a patient who had a very large gland; when the lithotribe was introduced the end of it could be felt beneath the skin in the neighborhood of the umbilicus. One thought that the urethra had been perforated, and that the instrument evidently could not be in the bladder. The stone was evacuated and, to make sure that there was no such opening in the bladder, he explored it and found none. In this case Dr. Meyer also felt the instrument directly under the skin. Having had this experience in the other case he wished to make sure of its position, so he did not attempt to do a litholapaxy, but incised the bladder and carefully searched for any perforation either in the urethra or the bladder, and found no such opening. He removed the stone and treated the bladder by inversion. He was glad he did not crush the stone, for it was such a beautiful specimen. If the lithotribe should be felt beneath the skin one should not think that there was any perforation of the bladder.

A Contribution to the Pathology and Prognosis of Diseases of the Bladder.—By Dr. Robert Holmes Greene and Dr. Harlow Brooks. (Will be published in a subsequent issue of MEDICAL NEWS.)

Dr. Frederic Bierhoff said he was very much interested in this paper because it had been his privilege to examine a great number of bladders with the cystoscope, and he found that the necropsical findings agreed perfectly with the conditions determined by examinations of the living. There was one class of the cases mentioned that was particularly interesting because little had been said of them in medical literature, a class re-

ferred to in the paper as "prostatics without prostates." He had found a number of cases of this class to be primarily due to tabes. Those cases had also been referred to by Von Frankl Hochwart and Zuckerkandl. They made a careful examination of a large number of tabetic patients, recording the muscular power, capacity, etc., of the bladders. They came across a number of cases in which there was a spasmodic obstruction in the deeper urethra. He said that he believed that, as a result of this tonic spasm, it was possible for a true hypertrophy of the bladder to result.

He had published a case, in 1899, in which there was a true muscular hypertrophy with distinct diverticula in the female. This patient had a marked cystitis, and she was examined because of that. She had, also, a marked tabes. Examination by the cystoscope showed an exquisitely pronounced vesical hypertrophy with well-defined diverticula. It could only be assumed that the cause, as given by Von Frankl Hochwart and Zuckerkandl was a tonic spasm of the deep urethral muscles. Upon careful examination it was found that the insertion of any instrument revealed a pronounced spasm in the deeper urethra, and that cocainizing the part relieved it entirely. When once the instrument passed that point the bladder emptied itself beautifully. The largest sized instruments, also, could be passed. The woman never emptied her bladder completely. The doctor said he had met the same condition in the male, where there was absolutely no prostatic hypertrophy, or organic stricture, yet there had been from 450 to 750 c.c. residual urine; there had been found a distinct hypertrophy of the muscular coat. He said that these cases were of great importance because they were often incorrectly diagnosed, or not recognized. These patients come to me on account of frequent micturition, or else because of a cystitis that is difficult of cure. These cases should be regularly catheterized in the early stages with the greatest care regarding asepsis.

BOOK REVIEWS.

THE PRACTICAL TREATMENT OF STAMMERING AND STUTTERING, with Suggestions for Practice and Helpful Exercises. By GEORGE ANDREW LEWIS, and a treatise on the Cultivation of the Voice, by GEORGE B. HYN-SON, M.A. George Andrew Lewis, Detroit.

Few of the minor ailments can give so much inconvenience and be the cause of so much discomfort as stammering and stuttering. It has been recognized now for many years that the speech defects can be remedied to a very large extent by means of proper training undertaken in early years, before the habit has become inveterate. The fact that tabetics can be taught to walk again is the best illustration of how much can be done for nervous defects by properly directed training, even when they are dependent on serious degenerative changes. The uncertainty of the action of the tabetic compares somewhat with the stammerer, yet it can be greatly improved by the Fraenkel method of training the muscles once more. This book gives a very good idea of the practical treatment of these speech defects and supplies practical therapeutic suggestions of great value. The writers have evidently studied their subjects from the clinical standpoint and what they have to say is well worthy of attention. The consideration of such defects as distinctly pathological rather than merely the result of bad habit will set the treatment of these affections on a more satisfactory plane than heretofore, when they have often fallen into the hands of those whose only object was exploitation of the unfortunate stutterer.